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# THE M. A. C. BULLETIN

## AMHERST, MASS.

Vol. V. No. 1.

For January, 1913

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No. 31

### CATALOGUE

OF THE

## MASSACHUSETTS

### AGRICULTURAL COLLEGE,

1912-1913.

FIFTIETH ANNUAL REPORT.  
PART II.



BOSTON:  
WRIGHT & POTTER PRINTING CO., STATE PRINTERS,  
18 POST OFFICE SQUARE.  
1913.



Without excluding other scientific and classical studies, and including military tactics to teach such branches of learning as are related to agriculture and the mechanic arts in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life.— *Act of Congress, July 2, 1862.*

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MASSACHUSETTS  
AGRICULTURAL COLLEGE,  
AMHERST.

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CATALOGUE, 1912-1913.

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WRIGHT & POTTER PRINTING CO., STATE PRINTERS,  
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1913.

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THE STATE BOARD OF PUBLICATION.

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THE MASSACHUSETTS  
AGRICULTURAL COLLEGE.

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This issue of the catalogue represents the status of the college for the current college year, with provisional announcement of courses of study and other matters for the year to follow.

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The college reserves, for itself and its departments, the right to withdraw or change the announcements made in its catalogue. Special publication will be made should it become necessary on account of important changes.

# CALENDAR.

1913-14.

## REGULAR COURSES.

### 1913.

January 6, Monday, 1.10 P.M., . . . . .	Winter recess ends; chapel.
January 24, Friday, . . . . .	Semester examinations begin.
February 3, Monday, 1.10 P.M., . . . . .	Second semester begins; chapel.
March 28, Friday, 6 P.M., . . . . .	Spring recess begins.
April 7, Monday, 1.10 P.M., . . . . .	Spring recess ends.
May 30, Friday, . . . . .	Holiday, Memorial Day.
May 31, Saturday, . . . . .	Senior examinations begin.
June 7, Saturday, . . . . .	Non-senior examinations begin.
June 14-18, Saturday-Wednesday, . . . . .	Commencement.
June 19-21, Thursday-Saturday, . . . . .	Entrance examinations.
September 3-6, Wednesday-Saturday, . . . . .	Entrance examinations.
September 10, Wednesday, 1.30 P.M., . . . . .	First semester begins; chapel.
October 13, Monday forenoon, . . . . .	Half holiday, observance of Columbus Day.
November 26-December 1, Wednesday, 1 P.M.-Monday, 1.10 P.M., chapel, . . . . .	Thanksgiving recess.
December 19, Friday, 6 P.M., . . . . .	Winter recess begins.

### 1914.

January 5, Monday, 1.10 P.M., . . . . .	Winter recess ends; chapel.
January 23, Friday, . . . . .	Semester examinations begin.
February 2, Monday, 1.10 P.M., . . . . .	Second semester begins; chapel.
February 23, Monday forenoon, . . . . .	Half holiday, observance of Washington's Birthday.
March 27, Friday, 6 P.M., . . . . .	Spring recess begins.
April 6, Monday, 1.10 P.M., . . . . .	Spring recess ends.
April 20, Monday forenoon, . . . . .	Half holiday, observance of Patriots' Day.
June 1, Monday, . . . . .	Senior examinations begin.
June 6, Saturday, . . . . .	Non-senior examinations begin.
June 13-June 17, Saturday-Wednesday, . . . . .	Commencement.
June 18-20, Thursday-Saturday, . . . . .	Entrance examinations.





## MASSACHUSETTS AGRICULTURAL COLLEGE.

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**HISTORY.**—The Massachusetts Agricultural College was among the first of those organized under the national land grant act of 1862. This act granted public lands to the several States and Territories, the funds realized from the sale of which should be used to establish colleges of agriculture and mechanic arts; the bill was framed by the late Senator Justin Smith Morrill of Vermont. The Legislature of Massachusetts has granted money for the erection of nearly all the buildings now on the grounds, and makes annual appropriations for the maintenance of the college.

The college was incorporated in 1863, and on the 2d of October, 1867, was formally opened to its first class of students. At that time four buildings had been erected, and there were four regular instructors employed by the institution. In 1882 the State located its agricultural experiment station on the grounds of the college. Later, after the federal law was passed granting financial aid to experiment stations, the Massachusetts Agricultural Experiment Station was consolidated with the federal station, and subsequently the whole was incorporated with the college.

**COURSES.**—The college offers an education without tuition fee to any student who is a resident of Massachusetts and who meets the requirements for admission. Women are admitted on the same basis as are men. Students who are not residents of Massachusetts are required to pay a nominal tuition fee. The four-years<sup>1</sup> course leads to the degree of bachelor of science, and the graduate school offers advanced courses leading to the degrees of master of science and doctor of philosophy. The winter school of ten weeks, for admission to which no scholastic requirements are made, is held each winter, beginning early in January. There are other short courses at the college, such as the beekeepers' course and summer school. Various forms of extension teaching are carried on away from the college, such as correspondence courses, traveling schools, educational exhibits, lecture courses, demonstrations, etc.

**PURPOSE OF THE COLLEGE.**—The chief purpose of the college is to prepare men and women for the agricultural vocations. In this statement the term "agricultural vocations" is used in its broadest sense. Courses are offered which give efficient training in various agricultural pursuits, such as general farming, dairying, management of estates, poultry husbandry, fruit growing, market gardening, landscape gardening and forestry. Students are also fitted for positions in institutions designed for investigation in many sciences

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<sup>1</sup> Twenty-six teaching departments offer instruction in agriculture, horticulture, sciences, the humanities and rural social science. A system of major courses has recently been adopted which permits a student to elect work in 1 of 14 departments and to specialize in that and allied subjects for a period of two years.

underlying the great agricultural industry, for teaching in agricultural colleges and high schools, for scientific experts in chemistry, entomology and botany, and for business operations having connection with practical agriculture.

Though the agricultural vocations are thus the chief concern of the college, students also find the course one that fits them admirably for pursuits in which the sciences, particularly chemistry, botany and zoölogy, are an essential preparation. Still other students find the course a desirable education, without regard to future occupation. The course of study is designed to give a student a general college education, and in addition to make it possible for him to specialize in any department in which major courses are offered.

LOCATION AND EQUIPMENT.—The agricultural college is located in the town of Amherst. The grounds comprise more than 500 acres, lying about a mile north of the village center. The equipment of the college, both in buildings and facilities for instruction, is excellent. Amherst is about 98 miles from Boston, and may be reached over the Central Massachusetts division of the Boston & Maine Railroad, or by way of the Central Vermont Railroad. Electric car lines connect Amherst with Northampton, Holyoke and Springfield.

## THE MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

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Massachusetts provided for the establishment of an agricultural experiment station in 1882. This station, though on the college grounds and supported by the State, was then without organic connection with the college. Under an act of Congress, passed in 1887, an agricultural experiment station was established as a department of the college. It was supported by the general government. For a time, therefore, Massachusetts had two experiment stations at the college. In 1894 these were combined, and the station reorganized as a department of the college. It is now supported by funds from both the State and the general government. In 1906 the general government largely increased its support of experiment stations, on condition, however, that the money thus provided should be used only for research. The station now receives about one-third of its support from the State.

The station is under the direct supervision of the Board of Trustees. The chief officer is the director, who is responsible to the president and to the committee of the Board. The station is organized into a number of departments, all co-operating toward the betterment of agriculture. In most cases the heads of the station departments are heads of corresponding departments in the college. The work of the station takes three directions; namely, control work, experimentation and investigation. The station publishes numerous bulletins and two annual reports, one scientific, the other for practical farmers and for general distribution. These publications, conveying information as to results of experiments, are free, and circulate extensively, the mailing list containing some 20,000 addresses.

## THE CORPORATION.

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### MEMBERS OF THE CORPORATION.

	TERM EXPIRES
WILLIAM H. BOWKER of Concord, . . . . .	1913
GEORGE H. ELLIS of West Newton, . . . . .	1913
CHARLES E. WARD of Buckland, . . . . .	1914
ELMER D. HOWE of Marlborough, . . . . .	1914
NATHANIEL I. BOWDITCH of Framingham, . . . . .	1915
WILLIAM WHEELER of Concord, . . . . .	1915
ARTHUR G. POLLARD of Lowell, . . . . .	1916
CHARLES A. GLEASON of New Braintree, . . . . .	1916
FRANK GERRETT of Greenfield, . . . . .	1917
HAROLD L. FROST of Arlington, . . . . .	1917
CHARLES H. PRESTON of Danvers, . . . . .	1918
FRANK A. HOSMER of Amherst, . . . . .	1918
DAVIS R. DEWEY of Cambridge, . . . . .	1919
M. FAYETTE DICKINSON of Brookline, . . . . .	1919

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 KENYON L. BUTTERFIELD, *President of the College.*  
 DAVID SNEDDEN, *State Commissioner of Education.*  
 J. LEWIS ELLSWORTH, *Secretary of the State Board of Agriculture.*

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 CHARLES A. GLEASON of New Braintree, *Vice-President.*  
 J. LEWIS ELLSWORTH of Worcester, *Secretary.*  
 FRED C. KENNEY of Amherst, *Treasurer.*  
 CHARLES A. GLEASON of New Braintree, *Auditor.*

### STANDING COMMITTEES OF THE CORPORATION.<sup>1</sup>

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--	--	--

#### *Committee on Course of Study and Faculty.*

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--	--	---

<sup>1</sup> The president of the college is *ex officio* member and secretary of standing committees.

*Committee on Farm.*

NATHANIEL I. BOWDITCH, <i>Chairman.</i>		CHARLES A. GLEASON.
FRANK GERRETT.		GEORGE H. ELLIS.

*Committee on Horticulture.*

J. LEWIS ELLSWORTH, <i>Chairman.</i>		ELMER D. HOWE.
DAVIS R. DEWEY.		HAROLD L. FROST.

*Committee on Experiment Department.<sup>1</sup>*

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J. LEWIS ELLSWORTH.		CHARLES E. WARD.
HAROLD L. FROST.		

*Committee on Buildings and Arrangement of Grounds.*

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WILLIAM WHEELER.		M. FAYETTE DICKINSON.
CHARLES H. PRESTON.		

*Examining Committee of Overseers from the State Board of Agriculture.*

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 FRANK P. NEWKIRK of Easthampton.  
 WILLIAM E. PATRICK of Warren.  
 JOHN J. ERWIN of Wayland.  
 R. HENRY RACE of North Egremont.

---

<sup>1</sup> The director of the experiment station is a member of the committee on experiment department, without vote.

## OFFICERS OF THE INSTITUTION.

[The names of the faculty are arranged in groups according to rank. Within these groups, the order depends upon seniority of service in the college, not upon seniority of appointment to the position now held.]

### THE FACULTY.

KENYON L. BUTTERFIELD, A.M., LL.D., . . . . .	President's House.
President of the College, and Head of Division of Rural Social Science.	
GEORGE F. MILLS, A.M., . . . . .	46 Amity Street.
Dean of the College and Professor of Languages and Literature.	
CHARLES H. FERNALD, Ph.D., . . . . .	3 Hallock Street.
Honorary Director of the Graduate School.	
WILLIAM P. BROOKS, <sup>1</sup> Ph.D., . . . . .	— —
Director of the Experiment Station and Lecturer on Soil Fertility.	
WILLIAM D. HURD, M.Agr., . . . . .	82 Pleasant Street.
Director of the Extension Service.	
CHARLES E. MARSHALL, Ph.D., . . . . .	Sunset Avenue.
Director of Graduate School and Professor of Microbiology.	
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Head of Division of Horticulture and Professor of Landscape Gardening.	
JAMES A. FOORD, M.Sc., . . . . .	56 Lincoln Avenue.
Head of Division of Agriculture and Professor of Farm Administration.	
ROBERT J. SPRAGUE, Ph.D., . . . . .	Mount Pleasant.
Head of Division of the Humanities and Professor of Economics and Sociology.	
JOSEPH B. LINDSEY, Ph.D., . . . . .	47 Lincoln Avenue.
Goessmann Professor of Chemistry.	
CHARLES WELLINGTON, Ph.D., . . . . .	14 Maple Avenue.
Professor of Chemistry.	
JAMES B. PAIGE, B.Sc., D.V.S., . . . . .	42 Lincoln Avenue.
Professor of Veterinary Science, Chairman of Division of Science.	
GEORGE E. STONE, Ph.D., . . . . .	Mount Pleasant.
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PHILIP B. HASBROUCK, B.Sc., . . . . .	130 Pleasant Street.
Professor of Physics and Registrar of the College.	
JOHN E. OSTRANDER, A.M., C.E., . . . . .	44 North Prospect Street.
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HENRY T. FERNALD, Ph.D., . . . . .	44 Amity Street.
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GEORGE C. MARTIN, C.E., Captain 18th U. S. Infantry, . . . . .	35 North Prospect Street.
Professor of Military Science and Tactics.	
EDWARD A. WHITE, B.S., . . . . .	Mount Pleasant.
Professor of Floriculture.	
WILLIAM R. HART, A.M., . . . . .	97 Pleasant Street.
Professor of Agricultural Education.	
FRED C. SEARS, M.Sc., . . . . .	Mount Pleasant.
Professor of Pomology.	
FRED C. KENNEY, . . . . .	Mount Pleasant.
Treasurer of the College.	

<sup>1</sup> On leave of absence.

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Associate Dean and Professor of Literature.	
WILLIAM D. CLARK, M.F.,	25 North Prospect Street.
Professor of Forestry.	
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Associate Professor of Agronomy.	
ROBERT W. NEAL, A.M.,	7 Woodside Avenue.
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ELMER K. EYERLY, A.M.,	50 Amity Street.
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JOHN A. MCLEAN, A.B., B.Sc.Agr.,	Lincoln Block.
Associate Professor of Animal Husbandry.	
JOHN C. GRAHAM, B.Sc.Agr.,	North Amherst.
Associate Professor of Poultry Husbandry.	
GUY C. CRAMPTON, Ph.D.,	86 Pleasant Street.
Associate Professor of Entomology.	
CHARLES A. PETERS, Ph.D.,	Sunset Avenue.
Associate Professor of Inorganic and Soil Chemistry.	
A. VINCENT OSMUN, M.Sc.,	North Amherst.
Assistant Professor of Botany.	
EDGAR L. ASHLEY, A.M.,	Prospect House.
Assistant Professor of German.	
ANDERSON A. MACKIMMIE, A.B.,	Nutting Avenue.
Assistant Professor of French.	
BURTON N. GATES, Ph.D.,	42 Lincoln Avenue.
Assistant Professor of Beekeeping.	
CURRY S. HICKS, B.Sc.,	8 Allen Street.
Assistant Professor of Physical Education and Hygiene.	
FREDERICK L. YEAW, B.Sc.,	17 Fearing Street.
Assistant Professor of Market Gardening.	
GEORGE S. GAGE, Ph.D.,	27 Sunset Avenue.
Assistant Professor of Animal Pathology.	
ERNEST ANDERSON, Ph.D.,	5 Nutting Avenue.
Assistant Professor of General and Physical Chemistry.	
HENRY E. SMITH, M.A.,	Nutting Avenue.
Assistant Professor of English.	
GEORGE N. HOLCOMBE, A.B., S.T.B.,	South Pleasant Street.
Lecturer in History.	
FRANK W. RANE, M.F.,	Boston.
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CHARLES R. GREEN, B.Agr.,	Mount Pleasant.
Librarian.	
C. ROBERT DUNCAN, B.Sc.,	31 North Prospect Street.
Instructor in Mathematics.	
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Instructor in Physics.	
WILLARD A. WATTLES, A.M.,	Mount Pleasant.
Instructor in English.	
WILLIAM L. HARMOUNT, A.B.,	86 Pleasant Street.
Instructor in French.	
ELVIN L. QUAIFFE, B.Sc.Agr.,	9 Fearing Street.
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WILLIAM J. FITZMAURICE, Assistant in Physical Education.	- -
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## GRADUATE ASSISTANTS.

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## OTHER COLLEGE OFFICERS.

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RALPH J. WATTS, B.Sc., Secretary to the President.	Nutting Avenue.
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NEWTON WALLACE, Electrician.	6 Phillips Street.
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CLARENCE A. JEWETT, Superintendent of Buildings.	112 Pleasant Street.
JAMES WHITING, Foreman, Department of Floriculture.	Hallock Street.
WILLIAM CHESLEY, Steward, Dining Hall.	Draper Hall.
JOHN J. LEE, Sergeant, Assistant to the Military Detail.	9 Phillips Street.
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Clerk, Treasurer's Office.	
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Stenographer, Division of Horticulture.	
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Clerk, Dean's Office.	
Miss LORIAN P. JEFFERSON, . . . . .	Kendrick Place.
Expert Secretary, Division of Rural Social Science.	

## THE EXTENSION SERVICE STAFF.

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Director.	
EARNEST D. WAID, B.Agr., . . . . .	Amity Street.
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ORION A. MORTON, . . . . .	Mount Pleasant.
Extension Professor of Agricultural Education.	
EZRA L. MORGAN, M.A., . . . . .	Amity Street.
Community Field Agent.	
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Extension Instructor in Dairying and Animal Husbandry.	
RALPH W. REES, B.Sc., . . . . .	17 Fearing Street.
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CHARLES H. WHITE, B.Sc., . . . . .	North Uxbridge.
Field Agent, Worcester County.	
HERBERT J. BAKER, B.Sc., . . . . .	— —
Field Agent in Farm Management.	
ARTHUR T. DAILEY, B.Sc., . . . . .	9 Fearing Street.
Supervisor of Correspondence Courses.	
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Clerk to the Director.	
Miss HANNAH GRIFFIN, . . . . .	Draper Hall.
Clerk.	

## THE EXPERIMENT STATION STAFF.

WILLIAM P. BROOKS, <sup>1</sup> Ph.D., . . . . .	— —
Director.	
FRED W. MORSE, Ph.D., . . . . .	40 Pleasant Street.
Acting Director.	
JOSEPH B. LINDSEY, Ph.D., . . . . .	47 Lincoln Avenue.
Vice-Director.	
FRED C. KENNEY, . . . . .	Mount Pleasant.
Treasurer.	
CHARLES R. GREEN, B.Agr., . . . . .	Mount Pleasant.
Librarian.	

<sup>1</sup> On leave of absence.

## DEPARTMENT OF PLANT AND ANIMAL CHEMISTRY.

JOSEPH B. LINDSEY, Ph.D., Chemist.	47 Lincoln Avenue.
EDWARD B. HOLLAND, M.Sc., Associate Chemist, in charge of Research Division.	28 North Prospect Street.
FRED W. MORSE, Ph.D., Research Chemist.	40 Pleasant Street.
HENRI D. HASKINS, B.Sc., In charge of Fertilizer Division.	Amherst House.
PHILIP H. SMITH, M.Sc., In charge of Feed and Dairy Division.	102 Main Street.
LEWELL S. WALKER, B.Sc., Assistant.	19 Phillips Street.
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RUDOLPH W. RUPRECHT, B.Sc., Assistant.	31 Amity Street.
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HARRY L. ALLEN, Assistant.	89 Main Street.
JAMES R. ALCOCK, Assistant in Animal Nutrition.	Massachusetts Agricultural College.
CARLOS L. BEALS, B.Sc., Assistant.	North Amherst.

## DEPARTMENT OF AGRICULTURE.

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HENRY J. FRANKLIN, Ph.D., In charge of Cranberry Investigation.	East Wareham.
EDWIN F. GASKILL, B.Sc., Assistant Agriculturist.	North Amherst.

## DEPARTMENT OF HORTICULTURE.

FRANK A. WAUGH, M.Sc., Horticulturist.	Massachusetts Agricultural College.
FRED C. SEARS, M.Sc., Pomologist.	Mount Pleasant.
JACOB K. SHAW, Ph.D., Assistant Horticulturist.	1 Allen Street.

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GEORGE H. CHAPMAN, M.Sc., Assistant Botanist.	13 Fearing Street.
EDWARD A. LARRABEE, B.Sc., Assistant Botanist.	Clark Hall.

## DEPARTMENT OF ENTOMOLOGY.

HENRY T. FERNALD, Ph.D., Entomologist.	44 Amity Street.
BURTON N. GATES, Ph.D., Apiarist.	42 Lincoln Avenue.
ARTHUR I. BOURNE, B.A., Assistant in Entomology.	12 East Pleasant Street.

<sup>1</sup> On leave of absence.

## DEPARTMENT OF VETERINARY SCIENCE.

JAMES B. PAIGE, B.Sc., D.V.S., . . . . . 42 Lincoln Avenue.  
Veterinarian.

## DEPARTMENT OF METEOROLOGY.

JOHN E. OSTRANDER, A.M., C.E., . . . . . 35 North Prospect Street.  
Meteorologist.  
HARRIS W. ANGIER, . . . . . Massachusetts Agricultural College.  
Observer.

## OTHER OFFICERS OF THE EXPERIMENT STATION.

BENJAMIN G. SOUTHWICK, B.Sc., . . . . . Massachusetts Agricultural College.  
Secretary to the Director.  
Mrs. LUCIA G. CHURCH, . . . . . 4 Hallock Street.  
Stenographer, Director's Office.  
Miss F. ETHEL FELTON, . . . . . 9 Phillips Street.  
Stenographer, Department of Plant and Animal Chemistry.  
Miss BRIDIE O'DONNELL, . . . . . Hadley.  
Stenographer, Department of Entomology.  
Miss ALICE M. HOWARD, . . . . . North Amherst.  
Stenographer, Department of Plant and Animal Chemistry.  
Miss JESSIE V. CROCKER, . . . . . Sunderland.  
Stenographer, Department of Botany.  
Miss GRACE E. GALLOND, . . . . . 28 Pleasant Street.  
Stenographer, Director's Office.  
Miss MARY R. KINGSBURY, . . . . . 97 Pleasant Street.  
Stenographer, Department of Poultry Husbandry.

## STANDING COMMITTEES OF THE FACULTY.<sup>1</sup>

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1912-13.

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### CATALOGUE AND OTHER PUBLICATIONS.

Associate Professor NEAL.  
 Associate Professor EYERLY.  
 Associate Professor CANCE.

### COMMENCEMENT.

Professor PAIGE.  
 Captain MARTIN.  
 Professor WHITE.  
 Mr. KENNEY.  
 Mr. DUNCAN.  
 Mr. PHILIP H. SMITH.<sup>2</sup>

### COURSE OF STUDY.

Professor HART.  
 Professor WAUGH.  
 Professor FOORD.  
 Professor OSTRANDER.  
 Professor SPRAGUE.  
 Associate Professor CHAMBERLAIN.

### DISCIPLINE (ADVISORY).

Professor MILLS.  
 Professor HASBROUCK.  
 Captain MARTIN.  
 Professor LEWIS.  
 Associate Professor GORDON.  
 Assistant Professor MACKIMMIE.

### EMPLOYMENT.

Professor SEARS.  
 Mr. KENNEY.  
 Associate Professor HASKELL.

### ENTRANCE EXAMINATIONS AND ADMISSION.

Professor HASBROUCK.  
 Associate Professor GRAHAM.  
 Assistant Professor OSMUN.  
 Assistant Professor ASHLEY.  
 Mr. MACHMER.  
 Mr. WATTLES.

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<sup>1</sup> The president of the college is ex officio member of each standing committee.

<sup>2</sup> Not a member of the faculty.

## GRADUATE SCHOOL.

Director MARSHALL.  
Professor LINDSEY.  
Professor PAIGE.  
Professor STONE.  
Professor FERNALD.  
Professor SEARS.  
Associate Professor GORDON.

## LIBRARY.

Professor STONE.  
Professor WELLINGTON.  
Professor MARSHALL.  
Associate Professor CANCE.

## PHYSICAL EDUCATION AND ATHLETICS.

Assistant Professor HICKS.  
Director HURD.  
Professor LEWIS.  
Assistant Professor YEAW.

## SCHEDULE.

Associate Professor LOCKWOOD.  
Associate Professor NEAL.  
Associate Professor PETERS.

## SCHOLARSHIP.

Associate Professor GORDON.  
Professor MILLS.  
Professor HASBROUCK.  
Professor LEWIS.  
Assistant Professor MACKIMMIE.

## STUDENT LIFE.

Director HURD.  
Professor LEWIS.  
Associate Professor CHAMBERLAIN.  
Associate Professor MCLEAN.  
Associate Professor HASKELL.  
Assistant Professor MACKIMMIE.  
Assistant Professor HICKS.

## UNCLASSIFIED STUDENTS.

Professor WHITE.  
Associate Professor LOCKWOOD.  
Associate Professor PETERS.



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THE COLLEGE.

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## ADMISSION.

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### A. APPLICATION FOR ADMISSION.

Correspondence about admission should be addressed to the registrar.

Every applicant for admission to the college must be at least sixteen years old, and must present to the registrar proper testimonials of good character. Such testimonials, whenever possible, should come from the principal of the school at which the applicant has prepared for college. Candidates who desire to present themselves for examination in any subjects must make application to the college for such privilege on or before June 1 of the year in which examination is desired. Blanks for such application may be obtained by addressing the registrar of the college. All entrance credentials must be in the hands of the registrar before the applicant can matriculate.

### B. MODES OF ADMISSION.

Students are admitted to the freshman class either upon *certificate* or upon *examination*. No *diploma* from a secondary school will be considered.

CERTIFICATES. — The entrance requirements may be met by certification in any of the following ways: —

1. By presenting certificate from a school approved for such privilege by this college.

2. By presenting certificate from any school approved by the college entrance examination boards.

3. By presenting the customary credentials from the Board of Regents of the State of New York for any of the subjects of the entrance requirements.

Certificates must present not less than seven of the necessary fourteen credits in all. Those subjects lacking on certificate (except for the permitted number of conditions) must be made up at the time of the examinations for admission.

Blank forms for certification — sent to principals or school superintendents only — may be obtained on application to the registrar of the college.

EXAMINATIONS. — The examination in each subject may be oral or written, or both. The standard required for passing an examination for admission is 65 per cent. Conditions to the amount of two units will be allowed.<sup>1</sup>

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<sup>1</sup> *Entrance with Condition in English.* — Under the rule permitting entrance conditions of not more than two units of the preparatory subjects applicants may be admitted, upon examination, with a condition in English, provided that they show, upon examination, satisfactory preparation in work entitling them to a ranking of 60 or higher.

Students so admitted, must, to remove the condition, pass an examination covering the regular 3-units requirement.

*Places of Examination.*—Examinations for admission to the college are held as follows:—

In June of each year: in Amherst, in the building of the Department of Physics, Massachusetts Agricultural College; in Boston, in the College of Liberal Arts of Boston University, Boylston Street, corner of Exeter; in Worcester, in Horticultural Hall.

In September, examinations will be held in Amherst only.

*Schedule for Entrance Examinations, June 19–21, inclusive, 1913.*—The examinations in June will follow this schedule:—

*First Day.*

- 7.45 A.M. Registration.<sup>1</sup>
- 8 A.M. Plane geometry.
- 10 A.M. Chemistry.
- 11.30 A.M. Botany.
- 2 P.M. Algebra.
- 3.30 P.M. Physics.

*Second Day.*

- 8 A.M. Required English.
- 11 A.M. Solid geometry.
- 2 P.M. History, required and elective.

*Third Day.*

- 8 A.M. French, German, required and elective.
- 1 P.M. Latin A and B and all one-half electives, except those already noted.

*Schedule for Entrance Examinations in September.*—In September, 1913, the examinations will be given September 3–6, inclusive, and will follow the order indicated below:—

*First Day.*

- 1 P.M. Registration.
- 1.15–5 P.M. Greek A and B.

*Second Day.*

- 8 A.M. Plane geometry.
- 10 A.M. Chemistry.
- 11.30 A.M. Botany.
- 2 P.M. Algebra.
- 3.30 P.M. Physics.
- 4.30 P.M. Elective English.

*Third Day.*

- 8 A.M. Required English.
- 11 A.M. Solid geometry, agriculture.
- 2 P.M. History, required and elective.

*Fourth Day.*

- 8 A.M. French, German, required and elective.
- 1 P.M. Latin A and B and all one-half credit electives, except those already noted.

### C. REQUIREMENTS FOR ADMISSION.

The requirements for admission are based on the completion of a four-years course in a high school or its equivalent, and are stated in terms of units. The term unit means the equivalent of four or five recitations a week

<sup>1</sup> Candidates who have no examination at the time set for registration may register at the time of their first examination should they so desire.

for a school year. Neither more nor less credit will be given in any subject than is indicated in the table below. Fourteen units must be offered for admission, of which eight and one-half are required and five and one-half are elective.

(a) The following eight and one-half units are required:—

<i>Language.</i>	
English, . . . . .	3
French or German, . . . . .	2
<i>History and Civics.</i>	
History (elective), . . . . .	1
(a) Ancient history.	
(b) Medieval and modern history.	
(c) English history.	
(d) General history.	
(e) United States history and civics.	
<i>Mathematics.</i>	
Algebra, through progressions, . . . . .	1½
Plane geometry, . . . . .	1

(b) In addition to the requirements under (a), five and one-half units must be offered from the following-named elective subjects. Not more than four of those subjects in which the credit sought is one-half unit will be accepted.

<i>Language.</i>	
English in addition to requirements, . . . . .	1
French in addition to requirements, . . . . .	2 or 1 <sup>1</sup>
German in addition to requirements, . . . . .	2 or 1 <sup>1</sup>
Greek, . . . . .	2 or 3
Latin, . . . . .	2 or 3
<i>History.</i>	
In addition to requirements, . . . . .	1, 2, or 3
<i>Mathematics, and Other Sciences.</i>	
Solid geometry, . . . . .	½
Trigonometry, . . . . .	½
Chemistry, . . . . .	1
Physiography, . . . . .	½
Physiology, . . . . .	½
Agriculture, <sup>2</sup> . . . . .	½ or 1
Botany, <sup>2</sup> . . . . .	½ or 1
Geology, <sup>2</sup> . . . . .	½
Physics, <sup>2</sup> . . . . .	1
Zoölogy, <sup>2</sup> . . . . .	½
Commercial geography, <sup>3</sup> . . . . .	½
Drawing, <sup>3</sup> . . . . .	½
Manual training, <sup>3</sup> . . . . .	½ or 1

<sup>1</sup> If but one elective unit be offered, it must be in the same language as that offered to meet the two-year language requirement.

<sup>2</sup> Note-book required as part of preparation will be credited as part of the examination.

<sup>3</sup> Certification necessary in these subjects; no examinations given.

**PRESENTATION OF NOTE-BOOKS.** — The keeping of a note-book is required as part of the preparation in those subjects indicated (see note 2, page 25).

Candidates presenting themselves for examination in such subjects must present at the same time the required note-book, properly certified by the principal. Candidates presenting such subjects on certificate should not present note-books; but their certificate must state that note-books have been satisfactorily completed.

#### D. STATEMENT OF PREPARATION REQUIRED FOR ADMISSION.

In some cases the requirements of the College Entrance Examination Board are here mentioned. A pamphlet containing detailed explanation of these requirements can be had of the Board for 10 cents. Address substation 84, New York City.

**AGRICULTURE.**<sup>1</sup> — Owing to the wide divergence of the methods of teaching agriculture in the public schools, the student will be required to bring a statement from the principal of the amount and kinds of work accomplished and of the text-books used. The examination will be based somewhat upon this information; but it will call for not less than one-half year of creditable work of high school grade. The examination in agriculture will be given in September only.

**BOTANY.** — For one unit of credit in botany, the work outlined in the statement of requirements issued by the College Entrance Examination Board, or its equivalent, will be accepted. This work should occupy one school year and include laboratory and supplementary text-book study. For one-half unit of credit, work that covers the same ground but occupies half the time required for a full unit of credit will be accepted. These requirements are met by such texts as Steven's "Introduction to Botany" and Bergen and Davis's "Principles of Botany." A note-book containing neat, accurate drawings and descriptive records forms part of the requirement for either the half-unit or the one-unit credit; and this note-book must be presented by all applicants for admission upon examination in this subject. The careful preparation of an herbarium is recommended to all prospective students of this college, although the herbarium is not required.

**CHEMISTRY.** — The entrance examination in chemistry will cover the work outlined by the College Entrance Examination Board as preparatory for college entrance. In general, this consists of a year of high school chemistry from such text-books as Newell's "Descriptive Chemistry" or Remsen's "Elements of Chemistry," with laboratory work on the general properties of the common elements, some of the experiments being quantitative. The keeping of a note-book is required.

**MATHEMATICS.** — (a) *Required.* — Algebra: The four fundamental operations for rational algebraic expressions; factoring, determination of highest common factor and lowest common multiple by factoring; fractions, including complex fractions; ratio and proportion; linear equations, both numerical and literal, containing one or more unknown quantities; problems depending on linear equations; radicals, including the extraction of the square root of polynomials and numbers; exponents, including the fractional and negative; quadratic equations, both numerical and literal; simple cases of equations with one or more unknown quantities that can be solved by the methods of linear or quadratic equations; problems depending upon quadratic equations;

<sup>1</sup> Examination given in September only.

the binomial theorem for positive integral exponents, the formulas for the  $n$ th term and the sum of the terms of arithmetic and geometric progressions, with applications.

**Plane Geometry:** The usual theorems and constructions of good text-books, including the general properties of plane rectilinear figures; the circle and the measurement of angles; similar polygons; areas; regular polygons and the measurement of the circle; the solution of numerous original exercises, including loci problems; applications to the mensuration of lines and plane surfaces.

(b) *Elective.* — **Solid Geometry:** The usual theorems and constructions of good text-books, including the relations of planes and lines in space; the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and spherical triangle; the solution of numerous original exercises, including loci problems; applications to the mensuration of surfaces and solids.

**Plane Trigonometry:** A knowledge of the definitions and relations of trigonometric functions and of circular measurements and angles; proofs of the principal formulas and the application of these formulas to the transformation of the trigonometric functions; solution of trigonometric equations, the theory and use of logarithms, and the solution of right and oblique triangles.

**PHYSICS.** — To satisfy the entrance requirement in physics, the equivalent of at least one unit of work is required. This work should consist of both class-room work and laboratory practice. The work covered in the class room should be equal to that outlined in Hall & Bergen's "Text-book of Physics;" the laboratory work should represent at least thirty-five experiments involving careful measurements, with accurate recording of each in laboratory note-book. This note-book, certified by the instructor in the subject, must be submitted by each candidate presenting himself for examination in physics; credit for passing the subject will be given on laboratory notes and on the examination paper submitted. Candidates entering on certificate will not be required to present note-books, but the principal's certification must cover laboratory as well as class-room work.

**PHYSIOLOGY.** — Hough & Sedgwick's "The Human Mechanism;" Martin's "The Human Body: Briefer Course."

**ZOOLOGY, PHYSIOGRAPHY, GEOLOGY.** — The following suggestions are made concerning preparation for admission in the subjects named above: —

For physiography, Davis's "Elementary Physical Geography;" Gilbert & Brigham's "Introduction to Physical Geography." For zoölogy, text-books entitled "Animals" or "Animal Studies," by Jordan, Kellogg and Heath; Linville & Kelley's "A Text-book in General Zoölogy." For geology, A. P. Brigham's "A Text-book of Geology" or Tarr's "Elementary Geology."

Applicants for examination in zoölogy are *required* to present certified laboratory note-books; applicants for examination in the other subjects are *advised* to present note-books, if laboratory work has been done. Good note-books may be given credit for entrance. Examination in these subjects will be general, in recognition of the different methods of conducting courses; but students will be examined on the basis of the most thorough secondary school courses.

**HISTORY.** — The required unit must be offered in either ancient history, medieval and modern history, English history, general history, or United

States history and civics. Either one, two or three elective units in any of the historical subjects here named may be offered, provided that such units may not be offered in the same subject in which the required unit has been offered.

Preparation in history will be satisfactory if made in accordance with the recommendations of the committee of seven of the American Historical Association, as outlined by the College Entrance Examination Board. The examination will require comparisons and the use of judgment by the candidate rather than the mere use of memory, and it will presuppose the use of good text-books, collateral reading and practice in written work. Geographical knowledge may be tested by requiring the location of places and movements on an outline map.

To indicate in a general way the character of the text-book work expected, the texts of the following authors are suggested: Botsford, Morey or Myers, in ancient history (to 814 A.D.); Adams, West or Myers, in medieval history; Montgomery, Larned or Cheyney, in English history; Myers or Fisher, in general history; Fiske, together with MacLaughlin or Montgomery, in United States history and civics.

ENGLISH. — For 1913, 1914: —

*English Grammar and Composition.* — Command of correct and clear English (spoken or written) requires instruction in grammar and composition. English grammar should ordinarily be reviewed in the secondary school; and correct spelling and grammatical accuracy should be rigorously exacted in connection with all written work during the four years. The principles of English composition governing punctuation, the use of words, paragraphs, and the different kinds of whole composition, including letter writing, should be thoroughly mastered; and practice in composition, oral as well as written, should extend throughout the secondary school period. Written exercises may well comprise narration, description and easy exposition and argument based upon simple outlines. It is advisable that subjects for this work be taken from the student's personal experience, general knowledge and studies other than English, as well as from his reading in literature. Finally, special instruction in language and composition should be accompanied by concerted effort of teachers in all branches to cultivate in the student the habit of using good English in his recitations and various exercises, whether oral or written.

*Literature.* — Ability to read with accuracy, intelligence and appreciation is sought through study of books included in two lists, headed respectively "Reading" and "Study," from which may be framed a progressive course in literature covering four years. In connection with both lists the student should be trained in reading aloud, and encouraged to commit to memory some of the more notable passages, both in verse and in prose. As an aid to literary appreciation, he is further advised to acquaint himself with the most important facts in the lives of the authors whose works he reads, and with their place in literary history.

(a) Reading: The aim of this course is to foster in the student the habit of intelligent reading, and to develop a taste for good literature by giving him a first-hand knowledge of some of its best specimens. He should read the books carefully, but his attention should not be so fixed upon details that he fails to appreciate the main purpose and charm of what he reads.

With a view to large freedom of choice, the books provided for reading are arranged in the following groups, from which at least ten units (each unit being set off by semicolons) are to be selected, two from each group: —

I. The "Old Testament," comprising at least the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings and Daniel, together with the books of Ruth and Esther; the "Odyssey," with the omission, if desired, of books I., II., III., IV., V., XV., XVI., XVII.; the "Iliad," with the omission if desired, of books XI., XIII., XIV., XV., XVII., XXI.; Virgil's "Æneid." The "Odyssey," "Iliad" and "Æneid" should be read in English translations of recognized literary excellence.

For any unit of this group a unit from any other group may be substituted.

II. Shakspeare's "Merchant of Venice;" "Midsummer Night's Dream;" "As You Like It;" "Twelfth Night;" "Henry the Fifth;" "Julius Cæsar."

III. Defoe's "Robinson Crusoe," Part I.; Goldsmith's "Vicar of Wakefield;" either Scott's "Ivanhoe" or "Quentin Durward;" Hawthorne's "House of the Seven Gables;" either Dickens's "David Copperfield" or "A Tale of Two Cities;" Thackeray's "Henry Esmond;" Mrs. Gaskell's "Cranford;" George Eliot's "Silas Marner;" Stevenson's "Treasure Island."

IV. Bunyan's "Pilgrim's Progress," Part I.; "The Sir Roger de Coverley Papers" in "The Spectator;" Franklin's "Autobiography" (condensed); Irving's "Sketch Book," Macaulay's "Essays on Lord Clive" and "Warren Hastings;" Thackeray's "English Humourists;" selections from Lincoln, including at least the two inaugurals, the speeches in Independence Hall and at Gettysburg, the last public address and the letter to Horace Greeley, along with a brief memoir or estimate; Parkman's "Oregon Trail;" either Thoreau's "Walden," or Huxley's "Autobiography" and selections from "Lay Sermons," including the addresses on "Improving Natural Knowledge;" "A Liberal Education" and "A Piece of Chalk;" Stevenson's "Inland Voyage" and "Travels with a Donkey."

V. Palgrave's "Golden Treasury" (first series), books II. and III., with especial attention to Dryden, Collins, Gray, Cowper and Burns; Gray's "Elegy in a Country Churchyard" and Goldsmith's "Deserted Village;" Coleridge's "Ancient Mariner" and Lowell's "Vision of Sir Launfal;" Scott's "Lady of the Lake;" Byron's "Childe Harold," Canto IV., and "Prisoner of Chillon;" Palgrave's "Golden Treasury" (first series), book IV., with especial attention to Wordsworth, Keats and Shelley; Poe's "Raven," Longfellow's "Courtship of Miles Standish," and Whittier's "Snow Bound;" Macaulay's "Lays of Ancient Rome" and Arnold's "Sohrab and Rustum;" Tennyson's "Gareth and Lynette," "Lancelot and Elaine" and "The Passing of Arthur;" Browning's "Cavalier Tunes," "The Lost Leader," "How They Brought the Good News from Ghent to Aix," "Home Thoughts from Abroad," "Home Thoughts from the Sea," "Incident of the French Camp," "Hervé Riel," "Pheidippides," "My Last Duchess," "Up at a Villa — Down in the City."

(b) Study: This part of the requirement is intended as a natural and logical continuation of the student's earlier reading, with greater stress laid upon form and style, the exact meaning of words and phrases, and the

understanding of allusions. For this close reading are provided a play, a group of poems, an oration and an essay, as follows:—

Shakspere's "Macbeth;" Milton's "L'Allegro," "Il Penseroso" and "Comus;" either Burke's "Speech on Conciliation with America," or both Washington's "Farewell Address" and Webster's "First Bunker Hill Oration;" either Macaulay's "Life of Johnson," or Carlyle's "Essay on Burns."

*Examination.*—However accurate in subject-matter, no paper will be deemed satisfactory if seriously defective in punctuation, spelling or other essentials of good usage.

The examination will be divided into two parts, one of which may be taken as a preliminary, and the other as a final.

The first part of the examination will be based upon ten units chosen, in accordance with the plan described earlier, from the lists headed reading; and it may include also questions upon grammar and the simpler principles of rhetoric, and short compositions upon topics drawn from the student's general knowledge or experience. On the books prescribed for reading, the form of the examination will usually be the writing of short paragraphs on several topics which the candidate may choose out of a considerable number. These topics will involve such knowledge and appreciation of plot, character-development and other qualities of style and treatment as may be fairly expected of boys and girls. In grammar and rhetoric, the candidate may be asked specific questions upon the practical essentials of these studies, such as the relation of the various parts of a sentence to one another, the construction of individual words in a sentence of reasonable difficulty, and those good usages of modern English which one should know in distinction from current errors.

The second part of the examination will include composition and these books comprised in the list headed study. The test in composition will consist of one essay or more, developing a theme through several paragraphs; the subjects will be drawn from the books prescribed for study, from the candidate's other studies and from his personal knowledge and experiences quite apart from reading. For this purpose the examiner will provide several subjects from which the candidate may make his own selections. The test on the books prescribed for study will consist of questions upon their content, form and structure, and upon the meaning of such words, phrases and allusions as may be necessary to an understanding of the works and an appreciation of their salient qualities of style. General questions may also be asked concerning the lives of the authors, their other works, and the periods of literary history to which they belong.

ENGLISH, ELECTIVE.<sup>1</sup>—To secure a fourth entrance credit in English, the applicant should do (a) the full equivalent of three years' work (required English), and also (b) the full equivalent of a fourth year's work. Applicants not certified with a fourth entrance credit will be examined, provided that the applicant, on or before June 1, notify the Department of English of his intention to take the examination, and supply thereafter the information needed by the department to prepare the examination questions. The information blanks will be forwarded by the Department of English upon receipt of the notice.

<sup>1</sup> Examination given in September only.



*Subjects accepted.* — The applicant may offer (a) any one of the subjects stated hereunder, or (b) any two of these subjects in combination.

(a) History of American literature.

(b) History of English literature (or lives of the great authors).

(c) Classics *other than those read to meet the three-credit requirement.*

(d) Advanced composition.

(e) History of the English language.

(f) Advanced high school grammar.

*Advanced Standing in College.* — Whether advanced standing shall be given applicants entering with a fourth credit in English will be determined by consideration of each case individually. Much weight is given to the ability of the student to express himself correctly and clearly, to think clearly, and to grasp the meaning of printed language. A special examination will be given in the opening week of college, notice of which will be posted on the English bulletin board, for freshmen who wish to apply for advanced standing.

*Presentation of Note-books and Themes.* — Applicants for examination, either for fourth-unit credit or for advanced standing, are advised to present the note-books, themes, etc., prepared by them in the preparatory school, as an aid toward determining their proficiency.

For 1915-19 inclusive: —

The requirements for entrance to the Massachusetts Agricultural College continue to be those of the National Conference on Uniform Entrance Requirements in English (for detailed statement governing 1915-19, apply to the College Entrance Examination Board).

Attention is called to two recommendations of the National Conference made in the official statement of requirements for 1915-19; namely: —

1. That colleges so desiring may set an examination requiring no prescribed books, but testing the same general kind of preparation as that indicated in the standard requirements.

2. That individual colleges take such steps as may be found necessary to ascertain whether candidates for entrance possess an adequate equipment in oral English.

These recommendations agree with the policy of the agricultural college, which will, as rapidly as seems expedient, proceed in accordance with them. Schools wishing to present candidates prepared in accordance with the intent of these recommendations will have the co-operation of the college. The college understands this intent to be the development of the pupil's powers of thought, understanding and expression; the test to be not merely a test of memory, but even more a test of ability, to be shown by dealing with new problems calling for the application of his previously gained knowledge and skill.

The list of books prescribed for 1915-19 here follows: —

(A) *Reading:* With a view to large freedom of choice, the books provided for reading are arranged in the following groups, from each of which at least two selections are to be made, except as otherwise provided under Group I: —

*Group I. Classics in Translation.* — The "Old Testament," comprising at least the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings and Daniel, together with the books of Ruth and Esther;

the "Odyssey," with the omission, if desired, of books I., II., III., IV., V., XV., XVI., XVII.; the "Iliad," with the omission, if desired, of books XI., XIII., XIV., XV., XVII., XXI.; the "Æneid." The "Odyssey," "Iliad" and "Æneid" should be read in English translations of recognized literary excellency.

For any selection from this group a selection from any other group may be substituted.

*Group II. Shakspeare.* — "Midsummer Night's Dream;" "Merchant of Venice;" "As You Like It;" "Twelfth Night;" "The Tempest;" "Romeo and Juliet;" "King John;" "Richard II.;" "Richard III.;" "Henry V.;" "Coriolanus;" "Julius Cæsar;"<sup>1</sup> "Macbeth;"<sup>1</sup> "Hamlet."<sup>1</sup>

*Group III. Prose Fiction.* — Malory's "Morte d'Arthur" (about 100 pages); Bunyan's "Pilgrim's Progress," Part I.; Swift's "Gulliver's Travels" (voyages to Lilliput and to Brobdingnag); Defoe's "Robinson Crusoe," Part I.; Goldsmith's "Vicar of Wakefield;" Frances Burney's "Evelina;" Scott's novels, any *one*, "Guy Mannering," "Ivanhoe," "Old Mortality," "Quentin Durward," "Rob Roy," or "The Talisman;" Jane Austen's novels, any *one*; Maria Edgeworth's "Castle Rackrent" or "The Absentee;" Dickens's novels, any *one*; Thackeray's novels, any *one*; George Eliot's novels, any *one*; Mrs. Gaskell's "Cranford;" Kingsley's "Westward Ho!" or "Hereward the Wake;" Reade's "The Cloister and the Hearth;" Blackmore's "Lorna Doone;" Hughes's "Tom Brown's School Days;" Stevenson's "Treasure Island," "Kidnapped" or "Master of Ballantrae;" Cooper's novels, any *one*; Poe's "Selected Tales;" Hawthorne's "The House of the Seven Gables," "Twice Told Tales" or "Mosses from an Old Manse;" a collection of short stories by various standard writers.

*Group IV. Essays, Biography, etc.* — Addison and Steele's "The Sir Roger de Coverley Papers" or selections from the "Tattler" and "Spectator" (about 200 pages); selections from Boswell's "Life of Johnson" (about 200 pages); Franklin's "Autobiography;" Irving's selections from the "Sketch Book" (about 200 pages) or "Life of Goldsmith;" Southey's "Life of Nelson;" Lamb's selections from the "Essays of Elia" (about 100 pages); Lockhart's selections from the "Life of Scott" (about 200 pages); Thackeray's "Lectures on Swift, Addison, and Steele in the English Humorists;" Macaulay: any one of the following of Macaulay's essays: "Lord Clive," "Warren Hastings," "Milton," "Addison," "Goldsmith," "Frederic the Great," "Madame d'Arblay;" Trevelyan's selections from the "Life of Macaulay" (about 200 pages); Ruskin's "Sesame and Lilies" or "Selections" (about 150 pages); Dana's "Two Years before the Mast;" Lincoln's "Selections," including at least the two "Inaugurals," the "Speeches in Independence Hall and at Gettysburg," the "Last Public Address," the "Letter to Horace Greeley," together with a brief memoir or estimate of Lincoln; Parkman's "The Oregon Trail;" Thoreau's "Walden;" Lowell's "Selected Essays" (about 150 pages); Holmes's "The Autocrat of the Breakfast Table;" Stevenson's "An Inland Voyage" and "Travels with a Donkey;" Huxley's "Autobiography" and selections from "Lay Sermons," including the addresses on "Improving Natural Knowledge," "A Liberal

<sup>1</sup> If not chosen for study under B.

Education" and "A Piece of Chalk;" a collection of "Essays" by Bacon, Lamb, De Quincey, Hazlitt, Emerson, and later writers; a collection of "Letters" by various standard writers.

*Group V. Poetry.* — Palgrave's "Golden Treasury" (first series), books II. and III., with special attention to Dryden, Collins, Gray, Cowper and Burns; Palgrave's "Golden Treasury" (first series), Book IV., with special attention to Wordsworth, Keats and Shelley (if not chosen for study under B); Goldsmith's "The Traveller" and "The Deserted Village;" Pope's "The Rape of the Lock;" a collection of English and Scottish ballads, as, for example, some "Robin Hood" ballads, "The Battle of Otterburn," "King Estmere," "Young Beichan," "Bewick and Grahame," "Sir Patrick Spens," and a selection from later ballads; Coleridge's "The Ancient Mariner," "Christabel" and "Kubla Khan;" Byron's "Childe Harold," Canto III. or IV., and "The Prisoner of Chillon;" Scott's "The Lady of the Lake" or "Marmion;" Macaulay's "The Lays of Ancient Rome," "The Battle of Naseby," "The Armada," "Ivry;" Tennyson's "The Princess" or "Gareth and Lynette," "Lancelot and Elaine," and "The Passing of Arthur;" Browning's "Cavalier Tunes," "The Lost Leader," "How They Brought the Good News from Ghent to Aix," "Home Thoughts from Abroad," "Home Thoughts from the Sea," "Incident of the French Camp," "Hervé Riel," "Pheidippides," "My Last Duchess," "Up at a Villa — Down in the City," "The Italian in England," "The Patriot," "The Pied Piper," "De Gustibus," "Instans Tyrannus;" Arnold's "Sohrab and Rustum" and "The Forsaken Merman;" selections from American poetry, with special attention to Poe, Lowell, Longfellow and Whittier.

(B) *Study:* This part of the requirement is intended as a natural and logical continuation of the student's earlier reading, with greater stress laid upon form and style, the exact meaning of words and phrases, and the understanding of allusions. The books provided for study are arranged in four groups, from each of which one selection is to be made.

*Group I. Drama.* — Shakspeare's "Julius Cæsar," "Macbeth," "Hamlet."

*Group II. Poetry.* — Milton's "L'Allegro," "Il Penseroso" and either "Comus" or "Lycidas;" Tennyson's "The Coming of Arthur," "The Holy Grail" and "The Passing of Arthur;" the selections from Wordsworth, Keats and Shelley in Book IV. of Palgrave's "Golden Treasury" (first series).

*Group III. Oratory.* — Burke's "Speech on Conciliation with America;" Macaulay's "Speech on Copyright" and Lincoln's "Speech at Cooper Union;" Washington's "Farewell Address" and Webster's "First Bunker Hill Oration."

*Group IV. Essays.* — Carlyle's "Essay on Burns," with a selection from Burns's "Poems;" Macaulay's "Life of Johnson;" Emerson's "Essay on Manners."

FRENCH. — The necessary preparation for this examination is stated in the description of the two-year course in elementary French recommended by the Modern Language Association, contained in the definition of requirements of the College Entrance Examination Board.

Third and fourth year French (elective subjects for admission). — For a single credit unit in French as an elective subject for entrance, the work

heretofore described by the College Entrance Examination Board as "intermediate" is expected. For two credit units, the work described as "intermediate" and "advanced" is expected.

GERMAN. — The entrance requirements in German conform to those of the College Entrance Examination Board for elementary German (the standard two-year requirements).

Third and fourth year German (elective subjects for admission). — For a single credit unit in German as an elective subject for entrance, when required units have been offered in German, the work heretofore described by the College Entrance Examination Board as "intermediate" is expected. For two credit units, the work described as "intermediate" and "advanced" is expected.

GREEK.<sup>1</sup> — Greek will receive credit as an elective requirement upon either examination or certification, as follows: —

A. Two credit units will be allowed if satisfactory proficiency is shown (including grammar) in (a) the translation of a passage or passages taken from the first four books of Xenophon's "Anabasis," and (b) the translation of passages of Attic prose at sight.

B. Three credit units will be allowed if, in addition to the above, satisfactory proficiency be shown in (a) the translation of a passage or passages from the first six books of Homer's "Iliad," and (b) translation of passages of Homer's "Iliad" at sight, with questions on the form and constructions of the passages.

LATIN. — Latin will receive credit as an elective requirement upon either examination or certification, as follows: —

A. Two credit units will be allowed if satisfactory proficiency is shown (including grammar) in (a) the translation of a passage or passages taken from Cæsar's "Gallic War," covering at least four books, and (b) the translation of passages of Latin prose at sight.

B. Three credit units will be allowed if, in addition to the above, satisfactory proficiency be shown in (a) the translation of a passage or passages selected from either books I. to VI. of Virgil's "Æneid," or six orations of Cicero, including those against Catiline; and (b) the translation into Latin prose of a passage of connected English narrative based on some portion of Cæsar's "Gallic War," books I. to IV.

COMMERCIAL GEOGRAPHY. — Preparation should be given in a course equivalent to that laid down in Adam's "Commercial Geography," Trotter's "Geography of Commerce," or a similar work.

DRAWING. — Applicants may offer either freehand or mechanical drawing, or both. They must be able to make an accurate freehand sketch, in either outline or light and shade, of the appearance of a group of geometric solids, and have a sufficient knowledge of perspective to enable them to draw correctly a simple geometric model from memory; or, if they present mechanical drawing, they must have considerable working familiarity with drawing instruments, and be able to make an accurate inked working drawing, in orthographic projection, of some simple object. Emphasis is laid on facility in doing good freehand lettering. For a limitation of the work that may be presented see "Manual Training."

<sup>1</sup> Examination given in September only.

**MANUAL TRAINING.** — An entrance credit of one-half or one unit is allowed for manual training, on the presentation of a certificate from the principal of the school showing the scope and character of the applicant's work. The preparation may include mechanical drawing, working in wood, metals, leather, etc. When mechanical drawing is presented as a part of the work in manual training, no other credit for drawing will be allowed. No examination is given in this subject; applicants must present certificates to secure credit.

#### E. ADMISSION TO ADVANCED STANDING.

Candidates for admission to advanced standing, in addition to meeting the regular entrance requirements, must also pass examinations in those subjects already pursued by the class they desire to enter. To meet this requirement, a student transferring to this college from another college or university of recognized standing must present the following credentials: —

1. A letter of honorable dismissal from the institution with which he has been connected.
2. A statement or certificate of his entrance record.
3. A statement from the proper officer showing a complete record of his work while in attendance.
4. A marked catalogue showing the courses pursued.

These credentials should be presented to the registrar. Applications will be judged wholly on their merits and the college may prescribe additional tests before accepting applicants or determining the standing to be granted them.

#### F. OTHER INFORMATION ABOUT ENTRANCE.

1. The privileges of the college may be withdrawn from any student at any time if such action is deemed advisable. (It is immaterial whether the pupil has entered by certificate or by examination.)
2. The examination in each subject may be either oral or written, or both. The standard required for passing an entrance examination is 65 per cent.
3. Candidates must receive credit for twelve units out of the total number required for entrance, and will be conditioned in those subjects not passed. No candidate deficient in both algebra and plane geometry will be admitted.
4. Examinations for the removal of entrance conditions will be held as follows: (1) First entrance condition examination, in the week following the Thanksgiving recess. (2) Second entrance condition examination, in the sixteenth week of the first semester.
5. Credits for entrance requirements, whether gained by certificate or by examination, will hold good for one year.
6. Examinations in part of the subjects required for entrance may be taken one year before entering college.
7. For information concerning expenses, scholarships, etc., see "General Information."
8. For information concerning admission to short courses see "Short Courses."
9. All requests for information concerning admission of unclassified students should be addressed to Prof. E. A. White, chairman of committee on unclassified students.

## G. UNCLASSIFIED STUDENTS.

Students not candidates for a degree (unclassified students) are admitted under the following provisions: —

1. No entrance examination is required, but applicants must bring certificates showing that they have finished a four-years high school course or its equivalent, and furnish satisfactory testimonials as to moral character.

2. No applicant under twenty-one years of age will be admitted as an unclassified student.

3. Each unclassified student must take from the regular courses a minimum of twelve credit hours a week.

4. In order to be admitted to any course, an unclassified student must have had all prerequisite subjects for that course.

5. Every unclassified student must do all the work of the courses elected, and take all examinations therein. In order to pass such courses he must attain a grade of at least 75 per cent. An unclassified student who passes in less than two-thirds of his work will be dropped from college.

6. All unclassified students are subject to the supervision of a special committee.

7. Any unclassified student may be dropped from college at any time if his presence in any class is undesirable or his work is unsatisfactory; and no unclassified student will be allowed to remain in college more than four semesters without the special permission of the faculty.

8. Unclassified students are subject to the regulations applying to classified students.

9. No student of this or any other institution who has not done efficient work therein shall be permitted to register as an unclassified student.

10. No unclassified student shall be allowed to participate in any inter-collegiate contests.

## COURSES OF INSTRUCTION.

### A. TABLE OF FRESHMAN AND SOPHOMORE SUBJECTS.

[The figures indicate the number of credit hours a week. For details, see the descriptions of courses.]

#### FRESHMAN YEAR.

##### *First Semester.*

[All work required.]

Chemistry, . . . . .	3
Algebra, . . . . .	3
Solid Geometry, <sup>1</sup> . . . . .	2
English, . . . . .	4
Public Speaking (at option of instructor), . . . . .	1
French or German, <sup>2</sup> . . . . .	4
Drill, . . . . .	1
Hygiene, . . . . .	1
College Life (attendance without credit).	

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##### *Second Semester.*

[All work required.]

Animal Husbandry, . . . . .	2
Chemistry, . . . . .	3
Trigonometry, . . . . .	3
Algebra, . . . . .	2
English, . . . . .	4
Public Speaking (if not taken in semester one), . . . . .	1
French or German, . . . . .	4
Drill, . . . . .	1
Physical Education, . . . . .	1

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#### SOPHOMORE YEAR.

##### *First Semester.*

[All work required.]

Agronomy, . . . . .	3
Physics, . . . . .	5
Zoölogy, . . . . .	3
English, . . . . .	2
French or German, . . . . .	3
Tactics, . . . . .	1
Drill, . . . . .	1

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<sup>1</sup> To be taken in course when not offered for entrance.

<sup>2</sup> Students may continue in college the language that they present for admission, or they may take the other; but they must continue whichever language they so elect until the end of the first semester of the sophomore year. Eleven college credits are required in this language.

*Second Semester.*

[All courses under "Required," with any two of those under "Elective."]

[Required.]	
Elementary Horticulture, . . . . .	2
Botany, . . . . .	4
English, . . . . .	2
Agricultural Industry, . . . . .	3
Drill, . . . . .	1
Tactics, . . . . .	1
Physical Education, . . . . .	1
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[Elective.]	
French or German, } Animal Husbandry, } Geology, . . . } Physics, . . . } Chemistry, . . } Surveying, . . }	Each 3 hours. Any two, . . . . . 6
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## B. MAJORS: JUNIOR AND SENIOR YEARS.

## GENERAL STATEMENT.

A major consists of 30 hours of correlated work, to be arranged by the student and an instructor called the adviser. The special provisions applying to the class of 1913 are given in the footnote.<sup>1</sup>

The list of courses found under each major on subsequent pages should not be considered as necessarily a rigid program to be followed. The heads of departments have suggested this series of courses as the best for the average man majoring in their department. Advisers may, however, make modifications to suit the particular needs of the student, provided these modifications conform precisely to the class schedule as published for the year.

## RULES.

RULE 1. *Election.* — Each student, in the second semester of his sophomore year, shall elect a major subject from the list of majors given below; and this major shall consist of 30 credit hours of correlated work.

RULE 2. *Minimum Credits.* — The minimum number of credits for the junior and senior years shall be 65, inclusive of Military Drill and Physical Education.

RULE 3. *Maximum Credits.* — The maximum number of credits for any semester of the junior or senior year shall be 21.

RULE 4. *Humanities and Rural Social Science.* — A minimum of 15 credit hours in the Divisions of the Humanities and Rural Social Science shall be required of all students during their junior and senior years, with the following restriction: that a minimum of 3 credit hours will be required in each of the divisions.

RULE 5. *Advisers.* — The work of each junior and senior will be under the immediate supervision of an instructor designated as major adviser. Ordinarily, the major adviser will be the head of the department in which the student intends to elect his major. Each student should consult with the adviser as soon as possible. The adviser has full authority to prescribe the student's work up to 30 hours. It is understood, however, that so far as practicable the individual needs of the student will be recognized. It is also hoped and expected that students will be disposed to seek the counsel of the adviser with respect to the remaining courses required for graduation.

RULE 6. *Free Electives.* — Each student is required to take 30 hours in his major and also 15 hours in the Divisions of the Humanities and Rural Social Science, making a total of 45 hours. He is allowed free choice for

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<sup>1</sup> Since it will not be possible for the class of 1913 to conform fully with the regulations concerning majors given above, the following regulations will apply to them in making their elections: —

As stated below, the minimum semester credits will be 15 hours, the maximum 21 hours, and the members of the class of 1913 will fill out their elective cards with these facts in mind. For the class of 1913 the required work after the sophomore year is to be counted as follows: —

5 credits in the junior year in Military Science and Physical Education.

3 credits in Economics 1.

3 credits in English, in other subjects in the Humanities, or in Rural Social Science.

the remaining part of his required hours, this remainder amounting to 15 hours minimum for the two years, or 35 hours maximum.

**RULE 7. Registration.**—No upper classman shall register until his major course of study is approved by his adviser.

(1) Course cards for recording the election of majors will be issued from the registrar's office on June 5.

(2) This card must be submitted by each student to his major adviser, who will lay out the course for the year and will countersign the same.

(3) Each course card must be filled out, giving the name of student, with his college address, also the name of parent or guardian, with the home address. When the elections have been entered on this card, and the balance of hours added by the student, the card must be returned to the registrar not later than June 16.

**RULE 8. Changes.**—Applications for changes may be made to the dean in writing at any time, and, when approved by him and by the committee on scholarship, become operative at the beginning of the semester following, provided that no change in the selection of a major may be made by any student after registration day of his senior year.

#### LIST OF MAJORS.

##### *Agriculture.*

Prof. JAMES A. FOORD, Adviser.

Course.	Credit.
Agronomy 3, . . . . .	3
Agronomy 6, . . . . .	3
Animal Husbandry 3, . . . . .	3
Animal Husbandry 5, . . . . .	3
Animal Husbandry 6, . . . . .	1
Animal Husbandry 9, . . . . .	3
Dairying 1, . . . . .	3
Dairying 2, . . . . .	3
Farm Administration 3, . . . . .	3
Farm Administration 4, . . . . .	3
Veterinary Science 1, . . . . .	3
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##### *Agronomy.*

Associate Prof. SIDNEY B. HASKELL, Adviser.

Course.	Credit.
Agronomy 3, . . . . .	3
Agronomy 4, . . . . .	3
Agronomy 5, . . . . .	3
Agronomy 6, . . . . .	3
Agronomy 8, . . . . .	3
Animal Husbandry 5, . . . . .	3
Animal Husbandry 9, . . . . .	3
Farm Administration 4, . . . . .	3
Chemistry 7, . . . . .	3
Chemistry 8, . . . . .	3
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*Animal Husbandry.*

Associate Prof. J. ALLAN McLEAN, Adviser.

Course.	Credit.
Agronomy 3, . . . . .	3
Animal Husbandry 3, . . . . .	3
Animal Husbandry 5, . . . . .	3
Animal Husbandry 6, . . . . .	1
Animal Husbandry 8, . . . . .	2
Animal Husbandry 9, . . . . .	3
Animal Husbandry 10, . . . . .	3
Animal Husbandry 11, . . . . .	2
Dairying 1, . . . . .	3
Farm Administration 3, . . . . .	3
Farm Administration 4, . . . . .	3
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*Dairying.*

Associate Prof. WILLIAM P. B. LOCKWOOD, Adviser.

Course.	Credit.
Animal Husbandry 5, . . . . .	3
Animal Husbandry 6, . . . . .	1
Animal Husbandry 8, . . . . .	2
Animal Husbandry 9, . . . . .	3
Animal Husbandry 11, . . . . .	2
Dairying 1, . . . . .	3
Dairying 2, . . . . .	3
Dairying 3, . . . . .	3
Dairying 4, . . . . .	3
Farm Administration 3, . . . . .	3
Farm Administration 4, . . . . .	3
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*Poultry Husbandry.*

Associate Prof. JOHN C. GRAHAM, Adviser.

Course.	Credit.
Poultry Husbandry 1, . . . . .	2
Poultry Husbandry 2, . . . . .	2
Poultry Husbandry 3, . . . . .	1
Poultry Husbandry 4, . . . . .	1-3
Poultry Husbandry 5, . . . . .	1
Poultry Husbandry 6, . . . . .	3
Poultry Husbandry 7, . . . . .	3
Poultry Husbandry 9, . . . . .	3
Pomology 1, . . . . .	3
Agronomy 3, . . . . .	3
Animal Husbandry 5, . . . . .	3
Animal Husbandry 9, . . . . .	3
Veterinary Science 1, . . . . .	3
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*General Horticulture.*

Prof. FRANK A. WAUGH, Adviser.

This major will consist of courses selected from the Departments of Pomology, Floriculture, Market Gardening, Landscape Gardening and Forestry, to suit the particular needs of the student. In special cases, courses from the Department of Agronomy will also be counted toward the major in general horticulture.

*Floriculture.*

Prof. EDWARD A. WHITE, Adviser.

Course.	Credit.
Floriculture 1, . . . . .	4
Floriculture 2, . . . . .	4
Floriculture 3, . . . . .	3
Floriculture 4, . . . . .	3
Horticulture 3, . . . . .	3
Horticulture 4, . . . . .	3
Entomology 1, . . . . .	3
Market Gardening 2, . . . . .	3
Botany 2, . . . . .	4
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*Note.*—Horticulture 3 and 4 is a junior subject, but to balance the work for the two years it would be better for the floricultural students to take the course in the senior year.

*Forestry.*

Prof. WILLIAM D. CLARK, Adviser.

Course.	Credit.
Forestry 1, . . . . .	3
Forestry 2, . . . . .	3
Forestry 3, . . . . .	3
Forestry 4, . . . . .	3
Forestry 5, . . . . .	2
Forestry 6, . . . . .	2
Entomology 5, . . . . .	3
Horticulture 3, . . . . .	3
Horticulture 4, . . . . .	3
Botany 13, . . . . .	4
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*Landscape Gardening.*

Prof. FRANK A. WAUGH, Adviser.

Course.	Credit.
Landscape Gardening 1, . . . . .	3
Landscape Gardening 2, . . . . .	3
Landscape Gardening 3, . . . . .	3
Landscape Gardening 4, . . . . .	3
Landscape Gardening 5, . . . . .	2
Landscape Gardening 6, . . . . .	2
Landscape Gardening 7, . . . . .	3
Landscape Gardening 8, . . . . .	3
Drawing 1, . . . . .	3
Drawing 2, . . . . .	3
Horticulture 3, . . . . .	3
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Landscape Gardening 6 will probably be given quite differently in alternate years, and thus should be open to *both* juniors and seniors.

Courses for juniors *only*: Landscape Gardening 1 and 2, Drawing 1 and 2.

Courses for seniors and graduates *only*: Landscape Gardening 7 and 8.

Courses open to juniors and seniors, both if possible: Horticulture 3 and 4 and possibly Landscape Gardening 3 and 4.

This grouping of subjects is offered only as an example. Other groupings may be approved by the adviser, but such other groupings must be subject to the class schedule.

*Pomology.*

Prof. FRED C. SEARS, Adviser.

Course.	Credit.
Pomology 1, . . . . .	3
Pomology 2, . . . . .	3
Pomology 3, . . . . .	3
Pomology 4, . . . . .	3
Botany 5, . . . . .	2
Botany 7, . . . . .	5
Agronomy 6, . . . . .	3
Farm Administration 3, . . . . .	3
Farm Administration 4, . . . . .	3
Entomology 2, . . . . .	3
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*Agricultural Chemistry.*

Associate Prof. CHARLES A. PETERS, Adviser.

Course.	Credit.
Chemistry 5, . . . . .	5
Chemistry 6, . . . . .	5
Chemistry 9, . . . . .	5
Chemistry 10, . . . . .	5
Chemistry 11, . . . . .	5
Chemistry 12, 14 or 16, . . . . .	5
Chemistry 13, . . . . .	3
Chemistry 15, . . . . .	3
Chemistry 18, . . . . .	2
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The major will consist of 30 credit hours selected from this list. The student will be advised concerning other subjects suited to be taken in connection with Chemistry.

*Economic Entomology.*

Prof. HENRY T. FERNALD, Adviser.

Course.	Credit.
Entomology 1, . . . . .	3
Entomology 2, . . . . .	2
Entomology 3, . . . . .	4
Entomology 4, . . . . .	4
Entomology 5, . . . . .	3
Entomology 8, . . . . .	3
Botany 3, . . . . .	4
Botany 4, . . . . .	2
Zoölogy 3, . . . . .	3
Zoölogy 4, . . . . .	3
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A major in Economic Entomology does not necessarily include all the subjects given in this list, but may be varied to some extent, in accordance with the future plans of the student, other modifications being permissible.

*Plant Physiology and Pathology.*

Prof. GEORGE E. STONE, Adviser.

Course.	Credit.
Botany 3, . . . . .	4
Botany 4, . . . . .	2
Botany 10, . . . . .	4 or 5
Botany 14, . . . . .	4
Chemistry 5, . . . . .	5
Chemistry 6, . . . . .	5
Entomology 1, . . . . .	3
Entomology 2, . . . . .	2
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	29 or 30

*Agricultural Education.*

Prof. WILLIAM R. HART, Adviser.

Course.	Credit.
Agricultural Education 1, . . . . .	3
Agricultural Education 2, . . . . .	3
Agricultural Education 3, . . . . .	2
Agricultural Education 4, . . . . .	3
Agronomy 3, . . . . .	3
Dairying 5, . . . . .	2
Farm Administration 3, . . . . .	3
Poultry Husbandry 1, . . . . .	2
Market Gardening 2, } . . . . .	3
Agronomy 5, . . . . .	
Botany 5, . . . . .	2
Pomology 1, . . . . .	3
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Some substitutions of other technical courses for some of the technical courses above mentioned will be made to meet the needs of individual students.

## SUMMARY.

There are four preliminary steps which a student should take in arranging for his major work.

1. Select a major.
2. Confer with major adviser for arrangement of courses, the plan to be approved by adviser in accordance with Rule 5 previously stated.
3. Select courses covering the four semesters of the junior and senior years in such a way that a minimum of 15 credits will be taken in the two Divisions, the Humanities and Rural Social Science; the distribution of all but 3 of these credits may be decided by the student.
4. Choose other courses so that the total number of credits for any semester shall be not less than 16 nor more than 21. (See Rules 2 and 3.)

## C. UNDERGRADUATE COURSES.

[All courses given in the first semester bear odd numbers; all given in the second semester bear even numbers. Studies are pursued in courses, "course" implying the study given a subject within one semester, without regard to the total number of hours or to the number of credits. The special mention of certain courses as prerequisite to other courses does not imply that no courses but those so mentioned are "preliminary or preparatory" within the meaning of the Book of Rules.]

**DIVISION OF AGRICULTURE.**

Professor FOORD.

**AGRONOMY.**

Associate Professor HASKELL, Dr. BROOKS, Mr. McDONALD.

*Required Course.*

1. SOILS AND FERTILIZERS.—A study of the formation, classification and physical and chemical properties of soils. This is followed by study of methods of soil improvement and of maintenance of fertility, including the use of farm manures, commercial fertilizers and soil amendments. Prerequisites, Chemistry 1 and 2. Sophomores; 3 hours. Credit, 3.

Associate Professor HASKELL and Mr. McDONALD.

*Elective Courses.*

3. FIELD AND FORAGE CROPS.—History, classification, cultivation, harvesting, commercial grading and valuation. The crops studied are the cereal grains, grasses, legumes, forage and root crops suitable to New England conditions. The work includes lecture, laboratory and field study of these various crops. Prerequisites, Agronomy 1 and Botany 2. For juniors primarily; 1 lecture and 2 laboratory periods. Credit, 3.

Mr. McDONALD.

4. ADVANCED FIELD CROPS.—Commercial production of grain, hay and root crops. Lecture, laboratory, and field study of the purity, quality, and vitality of the seed of these crops and the handling, grading and judging of their products. The work offered will not be confined to New England conditions. Prerequisite, Agronomy 3. For juniors primarily; 2 lectures and 1 laboratory period. Credit 3.

Mr. McDONALD.

5. ADVANCED SOILS.—A field, laboratory and lecture course on soils; their nature, composition, physical qualities, improvement. Field work, as far as the season allows, consists of detailed soil surveys in different parts of the Connecticut valley; this followed by laboratory work on the physical properties of the soil collected, on the effect of fertilizers on the soil, and on the mixing of fertilizers. Prerequisites, Agronomy 1 and Chemistry 1 and 2. For seniors primarily; 1 lecture period and 1 4-hour laboratory period weekly. Credit, 3.

Associate Professor HASKELL.

6. DRAINAGE AND IRRIGATION. — A field and lecture course on soil improvement, by drainage and irrigation. As a thesis each man is required, after studying an area of wet or swampy land, to present plans and estimates for its reclamation. Prerequisites, Agronomy 1 and Mathematics 8. Juniors and seniors; 1 lecture period and 1 4-hour laboratory period weekly. Credit, 3. Associate Professor HASKELL.

8. MANURES AND FERTILIZERS. — An advanced course, giving a general discussion of the different theories which have been held relative to the functions and importance of manures and fertilizers, and leading up to the views at present accepted. Each of the important manures and fertilizers will be discussed, its origin and its chemical and physical characteristics being considered. Each material taken up will be studied in relation to its capacity to supply plant food and to its effects upon soil texture, moisture, temperature and flora. Considerable attention will be devoted to consideration of the experimental work which has been done, and which is now in progress, in manures and fertilizers. This course is intended for seniors only. Prerequisite, Agronomy 1; 3 lectures a week, with occasional seminars. Credit, 3. Dr. BROOKS and Associate Professor HASKELL.

#### ANIMAL HUSBANDRY.

Associate Professor McLEAN, Mr. QUAIFFE.

##### *Required Course.*

2. ELEMENTARY JUDGING. — A study of the different market classes and grades of horses, cattle, sheep and swine. The purpose of this course is to familiarize beginners with the different classes of stock, and to give them a grounding in live stock judging. Text-book, Craig's "Live Stock Judging." Freshmen; 2 laboratory periods. Credit, 2.

Associate Professor McLEAN and Mr. QUAIFFE.

##### *Elective Courses.*

3. BREEDS AND TYPES OF LIVE STOCK. — A course covering the origin, history, development and characteristics of the different breeds of horses, cattle, sheep and swine. Text-book, Plumb's "Breeds and Types of Farm Animals." Prerequisite, Animal Husbandry 2. Sophomores; 1 lecture and 2 laboratory periods. Credit, 3. Mr. QUAIFFE.

5. PRINCIPLES OF BREEDING. — Text-book, Davenport's "Principles of Breeding." Prerequisite, Zoölogy 1. Juniors; 3 lectures. Credit, 3.

Associate Professor McLEAN.

6. LIVE-STOCK MANAGEMENT. — The work of this course consists of laboratory work by the individual students in the handling of live stock; with horses, such work as halter breaking, breaking to drive, driving, harnessing, casting, and fitting for show will be done; similarly, the practical handling of cattle, sheep and swine will be fully treated. Special study is given to halter making, splicing, hitches, knots and all rope work. Prerequisite, Animal Husbandry 3. Juniors; 1 laboratory. Credit, 1. Mr. QUAIFFE.



8. **ADVANCED STOCK JUDGING.** — This course is designed to equip Animal Husbandry students in the judging of classes of different types of live stock, to strengthen them in the selection of superior sires, and equip them for stock judging at fairs. Visits will be made to the best herds for the various breeds of stock in the State. Judging teams to represent the college will be selected largely from this class. Prerequisite, Animal Husbandry 3. Juniors; 2 laboratory periods. Credit, 2.

Associate Professor McLEAN.

9. **FEEDING AND MANAGEMENT.** — A study of the principles of animal nutrition; of the composition and qualities of feeding materials; of the feeding, care and management of dairy cattle from birth to maturity, with especial attention to economic production; a similar study of beef animals and beef production. Text-book, Henry's "Feeds and Feeding." Prerequisite, Animal Husbandry 3. Seniors; 3 lectures. Credit, 3.

Associate Professor McLEAN and Mr. QUAIFFE.

10. **FEEDING AND MANAGEMENT.** — A continuation of Course 9, dealing in a similar manner with horses, sheep and swine. Prerequisite, Course 9. Seniors; 3 lectures. Credit, 3.

Associate Professor McLEAN and Mr. QUAIFFE.

11. **HERD AND STUD-BOOK STUDY.** — An advanced course in the study of the breeds of live stock, familiarizing the student with the most productive sires and dams of the various breeds, and the successful lines and methods of breeding. Prerequisites, Animal Husbandry 5 and 8. Seniors; 2 hours. Credit, 2.

Associate Professor McLEAN.

#### DAIRYING.

Associate Professor LOCKWOOD, Professor MARSHALL, Mr. STORY, Mr. COONS.

##### *Elective Courses.*

1. **MILK AND MILK COMPOSITION.** — The development of the dairy business in the United States; the composition, secretion and general characteristics of milk; contamination and fermentation; the study of analysis of milk products by use of the Babcock test for fat, test for acidity and adulteration, and ordinary preservatives; moisture tests for butter; methods for testing herds and developing them to higher efficiency; problems. Two lecture hours and 1 2-hour laboratory period. Credit, 3.

Associate Professor LOCKWOOD.

2. **BUTTERMILKING.** — A study of separators and cream separation; handling milk and cream for buttermaking; preparation of starters, and ripening cream; churning; markets and their requirements; marketing, scoring and judging butter; management; problems; dairy machinery and care thereof. Prerequisite, Course 1; one lecture hour and 2 2-hour laboratory periods. Credit, 3.

Associate Professor LOCKWOOD.

3. **DAIRY BACTERIOLOGY.** — A study of bacteriology relative to market milk and dairy work. Prerequisites, Courses 1 and 2, Bacteriology 1; 3 2-hour laboratory periods. Credit, 3.

Professor MARSHALL.

4. MARKET MILK AND MILK PRODUCTS.—A study of market milk conditions, extent and development of the business; supply and delivery; food value of milk and its use as food; milk and its relation to the public health; methods for the proper handling and preparing of milk and cream for direct consumption; certified milk, requirements and production; pasteurizing; sterilizing; standardizing and modifying; milk laws and inspection. The manufacture of milk products other than butter, including cheese, condensed milk, cottage cheese, casein, milk powder, ice cream, etc. Prerequisites, Dairying 1, and Bacteriology 1; two lecture hours and 1 2-hour laboratory period. Credit, 3. Associate Professor LOCKWOOD.

5. DAIRYING.—A course designed primarily for teachers of secondary agriculture. The work given will cover briefly the composition and secretion of milk, the Babcock fat test, the relation of bacteria to dairy work and principles of creaming; separators; elementary buttermaking; proper methods of handling milk and cream; and the relation of market milk to the public health. One lecture hour and 1 2-hour laboratory period. Credit, 2. Associate Professor LOCKWOOD.

#### FARM ADMINISTRATION.

Professor FOORD.

##### *Elective Courses.*

3. FARM BUILDINGS AND MACHINERY.—A study of the material equipment of the farm aside from the land; farm buildings, their location, plan and arrangement; water supply; fencing problems; farm power; farm machinery; wagons. Prerequisites, Agronomy 1, Animal Husbandry 2, Physics 1. Primarily for seniors; 2 laboratory periods and 1 lecture hour. Credit, 3. Professor FOORD.

4. FARM MANAGEMENT.—The organization of the farm as a business enterprise. A discussion and study of some of the problems that confront the modern farmer, such as the choice of a farm, systems and types of farming, labor, marketing, records and farm accounts. Prerequisites, Agronomy 1 and 3, Animal Husbandry 2 and 3. Primarily for seniors; 2 lecture or recitation hours and 1 laboratory period. Credit, 3. Professor FOORD.

#### POULTRY HUSBANDRY.

Associate Professor GRAHAM, Mr. BROWN.

##### *Elective Courses.*

1. ELEMENTS OF POULTRY CULTURE.—This course consists of a comprehensive study of poultry-house construction, poultry-house equipment, winter-egg production, types and breeds of poultry. Juniors; 2 lectures. Credit, 2. Associate Professor GRAHAM.

2. ELEMENTS OF POULTRY CULTURE.—This is a continuation of Course 1, treating the subjects of incubation, brooding, care of growing stock, market poultry, including capons, roasters and broilers, and diseases of poultry. Juniors; 2 lectures. Credit, 2. Associate Professor GRAHAM.

3. **POULTRY PRACTICE WORK.**—This is a practical laboratory course in poultry carpentry, caaponizing, killing and picking; dressing and packing poultry, sorting and preparing eggs for market. Must be preceded or accompanied by Course 1. Juniors; 1 laboratory period. Credit, 1.

Mr. BROWN.

4. **INCUBATION AND BROODING.**—In this course students are required to set up and operate incubators and brooders, make a systematic study of the development of the chick in the egg, and the care of sitting hens. This course must be preceded or accompanied by Course 2. Juniors; time to be arranged. Credit, 1 to 3.

Mr. BROWN.

5. **PEN MANAGEMENT.**—This is a practical laboratory course. Students are required to care for a pen of fowls, keeping accurate records of eggs produced, food consumed, weather conditions, health of fowls, and profit and loss; must be preceded or accompanied by Course 1. Juniors; time to be arranged. Credit, 1.

Mr. BROWN.

6. **POULTRY MANAGEMENT.**—In this course a detailed study of large poultry farms and equipment, such as bone cutters, feed cutters, cramming machines, etc., will be carried on. It includes the laying out and planning of poultry buildings of all kinds, the mating of fowls, and the preparing of birds for exhibition. Attention to poultry diseases and investigation work carried on by experiment stations is prominent in this course. A few good poultry plants will be visited by the class for practical demonstrations. Prerequisites, Courses 1, 2, 3 and 4. Seniors; 2 lectures, 1 laboratory period. Credit, 3.

Associate Professor GRAHAM and Mr. BROWN.

7. **ADVANCED POULTRY JUDGING.**—This course includes a study of the origin and history of breeds and varieties, poultry organizations and poultry shows. The American Standard of Perfection will be used as a text. Prerequisites, Courses 1, 2, 3, 4 and 5. Seniors; 1 lecture and 2 laboratory periods. Credit, 3.

Associate Professor GRAHAM and Mr. BROWN.

9. **MARKET POULTRY AND POULTRY PRODUCTS.**—This course includes the study of market classifications of poultry, eggs and feathers; the requirements of different markets, methods of marketing, advantages and disadvantages of cold storage of poultry and eggs. Students will be required to fatten several lots of chickens by different methods and rations. Accurate data must be kept showing the gain in weight and quality, also the cost of feed, labor, etc., and the profit and loss. Judging and scoring of market poultry, both alive and dressed, and market eggs will be an important feature of this course. Prerequisites, Courses 1, 2 and 3. Seniors; 1 lecture or conference period and laboratory periods to be arranged. Credit, 3.

Associate Professor GRAHAM and Mr. BROWN.

## DIVISION OF HORTICULTURE.

Professor WAUGH.

[The general subject of horticulture divides naturally into the subjects of pomology, floriculture, landscape gardening and market gardening. A number of courses relate to more than one of these subjects, and are therefore grouped here under the general designation of horticulture.]

### *Required Course (General).*

2. NURSERY PRACTICE.—This course treats of the fundamental operations of horticulture—propagation, pruning, cultivation—as related to the physiology of the plant. Lectures and practicums; Bailey's "Nursery Book" as text in propagation. Sophomores; 2 hours. Credit, 2.

Mr. CHENOWETH.

### *Elective Courses (General).*

3. PLANT MATERIALS.—This course aims to make the student familiar with the character of the trees, shrubs and herbaceous perennials used in ornamental work, and with the methods of propagating them. Prerequisite, Horticulture 2; 2 lecture periods and 1 laboratory period. Credit, 3.

Professor WHITE.

4. PLANT MATERIALS.—A continuation of Course 3, taking up the field use of trees, shrubs and herbaceous plants, their native habitats, soils and plant associations, with a view to supplying to students in landscape gardening and floriculture a knowledge of plant species. Frequent practicums and field excursions. Prerequisite, Horticulture 3; 2 lecture periods and 1 laboratory period. Credit, 3.

Professor WHITE.

6. PLANT BREEDING.—This course is designed to introduce advanced students to the best modern views of variation, heredity and evolution, and to the best methods of studying the phenomena found in these subjects. The principles educed apply to both animal breeding and plant breeding, but the laboratory work (of which there is considerable) is concerned chiefly with plant life. Some practice work in hybridization and selection is undertaken, and students are trained as far as possible in the practical application of those principles which have direct bearing on the breeding of plants and the cultivation of crops. Seniors and graduates; open only to students well prepared in agricultural or horticultural subjects; 2 lecture periods and 1 2-hour laboratory period. [Not given in 1913-14.] Credit, 3.

## FLORICULTURE.

Professor WHITE.

### *Elective Courses.*

1. GREENHOUSE MANAGEMENT.—This course is designed to familiarize students with methods followed in the management of greenhouse crops. The students are instructed in the practical operation of glazing concrete, bench construction, bulb culture, greenhouse watering, fumigating and ventilating, in the care of furnaces, and in the methods of propagation of green-

house plants by seeds and cuttings. This is designed as a laboratory course, and students electing it will be expected to arrange their hours according to the needs of the work. Prerequisite, Horticulture 2. Juniors; 7 hours a week. Credit, 4. Professor WHITE.

2. GREENHOUSE MANAGEMENT.—A continuation of Course 1, including also a study of the location, arrangement and construction of greenhouses; the drawing of plans for commercial and private ranges, to show foundations and details in construction of superstructure; arrangement of heating pipes; estimate of comparative cost of different methods of construction; drafting specifications. Design making and table decorations are considered in this course. Juniors; prerequisite, Floriculture 1; 7 hours as stated under Course 1. Credit, 4. Professor WHITE.

3. FALL GREENHOUSE CROPS.—A study of important fall and winter crops and their care,—chrysanthemums, carnations, violets, roses, palms and various conservatory plants; the importation, purchase and growth of bulbous material; the preparation of material for forcing; house and church decorating. Lectures, text-books and laboratory exercises. Prerequisites, Floriculture 1 and 2. Seniors; 5 hours. Credit, 3. Professor WHITE.

4. SPRING GREENHOUSE CROPS.—The culture of individual crops in their relation to spring work in a florist establishment. A critical study of methods of propagating bedding plants, the nature and use of these plants, practice in planting them and in the spring care of herbaceous perennials and wholesale and retail marketing of spring plants. Lectures, text-books and practical exercises. Seniors; prerequisites, Floriculture 1, 2 and 3; 5 hours. Credit, 3. Professor WHITE.

#### FORESTRY.

Professor CLARK.

#### *Elective Courses.*

1. PRINCIPLES OF FORESTRY.—A lecture course for the purpose of giving the students a general view of the whole field of forestry and what forestry attempts to accomplish and has accomplished. Two lectures; juniors and seniors; not required of students who propose to major in forestry. Credit, 2. Professor CLARK.

3. DENDROLOGY.—During the first part of the semester frequent field trips will be made to identify and study the habits of our native forest trees. Later, the classification, range, distribution, forest habits, quality, uses and identification of wood of the commercial timber trees of the United States will be studied. Two 2-hour periods; lectures, recitations, laboratory or field work at option of instructor; juniors. Credit, 3. Professor CLARK.

4. SILVICULTURE.—Factors influencing forest growth; forest types; silvicultural systems; care and protection of forests; forest description; forest nursery practice and forest planting. Three lectures weekly until May 1; during May and June, one lecture and one 4-hour field period weekly; juniors. Prerequisite, Forestry 3. Credit, 3. Professor CLARK.

5. FOREST MENSURATION.—Methods of determining the volume of trees, logs and entire forests. Methods of computing volume tables, tree and forest growth and yield tables. Timber estimating. Three lectures; 72 hours of field work; seniors. Credit, 5. Professor CLARK.

6. FOREST VALUATION AND REGULATION.—Methods of determining the costs of growing timber crops and of arriving at the value of future growth or standing immature growth. Methods of regulating the harvest of crops so as to secure a sustained or annual yield. Prerequisite, Forestry 5; seniors; 3 lectures. Credit, 3 Professor CLARK.

### LANDSCAPE GARDENING.

Professor WAUGH, Mr. HARRISON.

#### *Elective Courses.*

1. ELEMENTS OF LANDSCAPE GARDENING.—Reconnaissance surveys and mapping, with special reference to the methods used in landscape gardening; detailed study of selected designs of leading landscape gardeners; grade design, road design and field work. Students should have preparation in surveying, mathematics, plant materials and drawing. Must be followed by Course 2. Juniors; 6 hours a week. Credit, 3. Mr. HARRISON.

2. ELEMENTS OF LANDSCAPE GARDENING.—As stated under Course 1. Prerequisite, Course 1.

3. GENERAL DESIGN.—Field notes; examination of completed works and those under construction; design of architectural details, planting plans, gardens and parks and private grounds; written reports of individual problems. Seniors; prerequisites, Landscape Gardening 1 and 2, and either plant materials (Horticulture 3 and 4) or advanced mathematics; must be followed by Course 4; 6 hours. Credit, 3. Professor WAUGH.

4. GENERAL DESIGN.—As stated under Course 3. Prerequisite, Course 3.

5. THEORY OF LANDSCAPE ART.—The general theory and applications of landscape study, including a brief history of the art. Seniors and graduates; 2 hours. Credit, 2. Professor WAUGH.

6. ARCHITECTURE.—The history of architectural development, the different historic types, with special reference to the underlying principles of construction and design and their relations to landscape design. Illustrated lectures, conferences, practice in designing; 2 hours. Credit, 2. (Alternating with Course 10.) Mr. HARRISON.

7. CIVIC ART.—The principles and applications of modern civic art, including city design, city improvement, village improvement and rural improvement. Prerequisites, Courses 1, 2 and 3; must be followed by Course 8; 6 hours. Credit, 3. Professor WAUGH.

8. CIVIC ART.—As stated under Course 7. Prerequisite, Course 7.

10. CONSTRUCTION AND MAINTENANCE. — Detailed instruction in methods of construction and planting in carrying out plans, in organization, reporting, accounting, estimating, etc.; maintenance work in parks and on estates, its organization, management, cost, etc. Two hours. Credit, 2. (Alternating with Course 6 and not to be given in 1912-13.) Mr. HARRISON.

#### MARKET GARDENING.

Assistant Professor YEAW.

##### *Elective Courses.*

2. ELEMENTS OF MARKET GARDENING. — A course designed for an introduction to market gardening as a business. The work consists primarily of actual field experience in handling vegetable crops from seed to maturity. This is supplemented with lectures and text-book, in which a study of methods, soils, fertilization, tillage and management is made. Juniors; 5 hours. Credit, 3. Assistant Professor YEAW.

3. ADVANCED MARKET GARDENING. — A continuation of the work begun in Market Gardening 2, taking up problems of seed growing, selection of varieties, crop management, harvesting, storage and marketing. A study is made of the greenhouse vegetable industry, and considerable time devoted to growing the special forced crops. Some time is given to a systematic study of vegetable description, classification and nomenclature. Collateral reading is required. Seniors; prerequisite, Market Gardening 2; 5 hours. Credit, 3. Assistant Professor YEAW.

#### POMOLOGY.

Professor SEARS, Mr. CHENOWETH, Mr. REES.

##### *Elective Courses.*

1. PRACTICAL POMOLOGY. — *General.* — A study of the general principles of the growing of fruits, dealing with such questions as selection of site, soils, windbreaks, laying out plantations, choice of stock, pruning, spraying, etc. Text and reference books; field and laboratory exercises. Prerequisite, Horticulture 2. Juniors; 4 hours. Credit, 3. Professor SEARS.

2. PRACTICAL POMOLOGY. — *Special.* — The special application of the general principles discussed in Course 1 to the culture of the principal kinds of fruits, such as apples, pears, peaches, plums, cherries and quinces; grape culture and the culture of small fruits, such as blackberries, raspberries, currants, gooseberries and strawberries. Text-books, lectures and reference books; field and laboratory exercises. Prerequisites, Horticulture 2 and Pomology 1. Juniors; 4 hours. Credit, 3. Professor SEARS.

3. SYSTEMATIC POMOLOGY. — A study of the varieties of the different fruits and of nomenclature, with critical descriptions; special reference being given to relationships and classification. Text-books, laboratory and field exercises. Prerequisites, Horticulture 2 and Pomology 1 and 2. Seniors; 4 hours. Credit, 3. Mr. CHENOWETH.

4. **COMMERCIAL POMOLOGY.**—The storing and marketing of fruits; includes a discussion of storage houses, the handling and storing of fruits, fruit packages, methods of grading and packing, etc. Text and reference books; laboratory exercises. Seniors; prerequisites, Horticulture 2, Pomology 1, 2 and 3; 4 hours. Credit, 3. Mr. CHENOWETH.

6. **SPRAYING.**—A study of (a) spraying materials, their composition, manufacture and preparation for use; the desirable and objectionable qualities of each material, formulas used, cost, tests of purity. (b) Spraying machinery, including all the principal types of pumps, nozzles, hose and vehicles; their structure and care. (c) Orchard methods in the application of the various materials used, with the important considerations for spraying each fruit and for combating each orchard pest. This course is designed especially to familiarize the student with the practical details of actual spraying work in the orchard. Spray materials are prepared, spraying apparatus is examined and tested, old pumps are overhauled and repaired, and the actual spraying is done in the college orchards and small fruit plantations. Prerequisites, Horticulture 2, Pomology 1 and 2. Seniors; 3 hours (1 lecture period and 1 laboratory period). Credit, 2.

Professor SEARS.

#### **DRAWING.**

Mr. HARRISON.

#### *Elective Courses.*

1. **FREEHAND DRAWING.**—Lettering; freehand perspective; sketching from type models, leaves, flowers and trees, insects and small animals; laying flat and graded washes in water colors; water color rendering of leaves, flowers and trees; conventional coloring and map rendering in water colors; conventional signs and mapping in ink. Juniors; 6 hours. Credit, 3. Mr. HARRISON.

2. **MECHANICAL DRAWING.**—Inking exercises; geometric problems; projection; intersections, isometric; shades and shadows; parallel; angular and oblique perspective; perspective drawing of buildings. Students should have preparation in plane and solid geometry. Juniors; 6 hours. Credit 3.

Mr. HARRISON.



**DIVISION OF SCIENCE.**

Professor PAIGE.

**BOTANY.**

Professor STONE, Assistant Professor OSMUN, Mr. McLAUGHLIN, Mr. SMITH.

[The object of the courses in botany is to teach those topics pertaining to the science which have a bearing upon economic and scientific agriculture. Undergraduate work extending through five semesters is offered. Considerable latitude is allowed students in the senior year in their electives; and, besides the courses here outlined, students often take up the study of histology or of systematic botany, the microscopic examination of pure and adulterated human and cattle foods, spices and drugs, etc. Students sufficiently prepared are occasionally permitted to undertake special physiological and pathological investigations. A botanical conference is held monthly wherein new problems in botanical science are considered by graduate students and the seniors who elect botany.]

*Required Course.*

2. GENERAL BOTANY.—The morphology, physiology and classification of plants. This course is fundamental. Its aim is to lay a foundation for the more specialized courses in botany which follow and to provide a general knowledge of the science for those students who will not take further work in the department. This course is prerequisite to all other courses given by the department. Laboratory work consists in the microscopic study of representatives of all the more important plant groups. This phase of the work is almost entirely devoted to morphology and histology, especial attention being given to the structure of higher plants. The lectures aim to amplify and interpret the laboratory work, dealing also with the function (physiology), classification (taxonomy) and ecology of plants. Each student is required to collect and prepare an herbarium of 75 species of native plants. Gray's "New Manual of Botany" is used in determining and naming plants. Though only 1 lecture period is scheduled for this course, it is understood that laboratory hours may be used for lectures at the discretion of the instructor. Sophomores; 1 lecture; 3 laboratory periods. Credit, 4.

Assistant Professor OSMUN and Mr. McLAUGHLIN.

*Elective Courses.*

3. CRYPTOGAMIC BOTANY.—Systematic study of typical forms of the lower plants (bacteria, algæ, fungi, lichens, mosses and ferns); instruction in laboratory technique and methods, and the making of herbaria of lichens, mosses and ferns. Laboratory work and lectures; field excursions for the purpose of observing environmental habits and collecting material for laboratory study; collateral reading. This course is intended for those students who wish to specialize in biology; its purpose is to afford more thorough scientific training than is offered in Course 5, and students electing this course may attend the lectures in Course 5. Prerequisite, Botany 2. Primarily for juniors. 1 lecture hour and 3 2-hour laboratory periods. Credit, 4.

Assistant Professor OSMUN.

4. CRYPTOGAMIC BOTANY.—This is a continuation of Course 3. Prerequisites, Botany 2 and 3. Primarily for juniors; 1 lecture hour and 2 2-hour laboratory periods. Credit, 2. Assistant Professor OSMUN.

5. PLANT PATHOLOGY.—This course comprises a study of the common diseases of crops and consideration of the methods for their prevention and control, and is intended especially for students in horticulture and agriculture. Laboratory work and lectures. Prerequisite, Botany 2. Primarily for juniors; 1 1-hour lecture and 1 2-hour laboratory period. Credit, 2. Professor STONE, Assistant Professor OSMUN and Mr. McLAUGHLIN.

7. PLANT PATHOLOGY.—This course includes a study of the diseases of one or more crops and the methods of controlling them. Laboratory work and lectures, together with extensive reading of experiment station literature. The course is intended for those who wish to become more familiar with the diseases of one or more groups of economic plants. Prerequisite, Botany 2. Seniors; students who take this course and continue in botany must take Course 8; 1 lecture period and 3 3-hour laboratory periods. Credit, 5. Professor STONE.

8. PLANT PATHOLOGY.—As stated in Course 7. Prerequisite, Course 7.

9. ECONOMIC FUNGI.—This course comprises the study of economic fungi from a technical point of view, and is intended for those students who wish for a more comprehensive knowledge of the phylogenetic relationship of fungi. Laboratory work and lectures. Problems of a practical or technical nature intimately associated with the control of diseases are taken up. Special monographs and more important station literature treating of the life history of fungi, etc., are studied. Prerequisites, Botany 2, 3 and 4. Must be followed by Course 10; seniors; 1 1-hour lecture period and 2 or 3 3-hour laboratory periods. Credit, 4 or 5. Professor STONE.

10. ECONOMIC FUNGI.—As stated in Course 9. Prerequisite, Course 9.

11. PLANT PHYSIOLOGY.—This course is largely experimental and is especially adapted to the needs of students who are taking chemistry. Laboratory work and lectures; various handbooks on plant physiology. Prerequisite, Botany 2. Must be followed by Course 12; seniors; 1 1-hour lecture period and 3 3-hour laboratory periods. Credit, 5. Professor STONE and Mr. McLAUGHLIN.

12. PLANT PHYSIOLOGY.—As stated in Course 11. Prerequisite, Course 11.

13. SHADE-TREE MANAGEMENT.—Physiology and pathology of shade trees. This course includes a comprehensive study of the diseases, structure and functions of trees and shrubs, and of every agency which in any way affects shade trees. Laboratory work and lectures; extensive reference reading. Designed for those students who intend to take charge of parks

or large estates, or to become tree wardens, city foresters, landscape gardeners or professional advisers and caretakers. Prerequisite, Botany 2. Must be followed by Course 14; seniors; 1 1-hour lecture period and 2 3-hour laboratory periods. Credit, 4. Professor STONE.

14. SHADE-TREE MANAGEMENT.—Physiology and pathology of shade trees. As stated in Course 13. Prerequisite, Course 13.

#### GENERAL AND AGRICULTURAL CHEMISTRY.

Professors LINDSEY and WELLINGTON,<sup>1</sup> Associate Professors CHAMBERLAIN and PETERS, Assistant Professor ANDERSON, Messrs. BOGUE, NOYES, FOWLER and GATES.

[The course in chemistry aims to teach accurate observation, logical thinking and systematic and constant industry. It likewise aims to give those students following the several agricultural occupations, or who are preparing themselves for work as teachers and investigators in the other sciences, a knowledge of the subject sufficient to enable them to apply it in their various lines of work. Students taking all of the undergraduate courses and who intend following chemistry as a vocation are prepared for positions as instructors in high schools and colleges, in the agricultural experiment stations, the United States Department of Agriculture, as well as in fertilizer, cattle food, sugar and dairy industries. Students are encouraged to take graduate work leading especially to the degree of M.Sc., and to thus prepare themselves for advanced positions as teachers in the agricultural colleges, as research chemists, and likewise for the more responsible positions connected with the different agricultural industries of the country. A fuller knowledge of the course of instruction will be found by consulting the following outline.]

#### *Required Courses.*

1. GENERAL CHEMISTRY.—*The Non-metals.*—An introduction to the fundamental chemical laws, together with a study of the common acid-forming elements and their compounds. Kahlenberg's "Outlines of Chemistry" is used as a text. The laboratory work is of two kinds. Those beginning the subject form one division and those who present chemistry for entrance are grouped in other divisions. The advance divisions, in addition to work not usually done in high schools, study simple volumetric quantitative processes such as the determination of the hardness of water, the available oxygen in hydrogen peroxide, the chlorine in soluble chlorides, the oxygen in bleaching powder and the strengths of solutions of acids and bases. Freshmen; lectures, 2 hours; laboratory, 2 hours. Credit, 3.

Associate Professor PETERS, Assistant Professor ANDERSON,  
Mr. BOGUE and Graduate Assistants.

2. GENERAL CHEMISTRY.—*The Metals.*—A continuation of Course 1. A study of the metals and their compounds. The laboratory work takes the synthetic form. Substances of agricultural importance are prepared in quantity and studied in detail by the student. These include ammonium sulfate from gas liquor, sulfur and arsenic insecticides and superphosphates, in addition to preparations outlined in Blanchard's "Synthetic Inorganic Chemistry." Attention is paid to the subjects of mass action and colloids. Prerequisite, Course 1. Freshmen; lectures, 2 hours; laboratory, 2 hours. Credit, 3.

Associate Professor PETERS, Assistant Professor ANDERSON,  
Mr. BOGUE and Graduate Assistants.

<sup>1</sup> Absent on leave, second semester; courses in charge of Associate Professor Peters.

*Elective Courses.*

3. QUALITATIVE ANALYSIS. — *Basic.* — A course in the systematic analysis of metallic salts, presented from the ionic viewpoint. The student studies closely the tests used in the separation and identification of the metals; he then applies these tests to unknown mixtures. Text, Gooch and Browning's "Outlines of Qualitative Analysis," with Böttger's "Qualitative Analysis" and Treadwell-Hall's "Qualitative Analysis" for reference. Prerequisite, Course 2; should be taken, particularly, by all intending to follow chemistry as a vocation. Sophomores; lecture, 1 hour; laboratory, 2 hours. Credit, 3.  
Assistant Professor ANDERSON and Mr. NOYES.

4. QUALITATIVE ANALYSIS. — *Acidic.* — A continuation of Course 3. A large part of the semester is spent in the examination qualitatively of minerals and of agricultural products. Prerequisite, Course 3. Sophomores; lecture, 1 hour; laboratory, 2 hours. Credit, 3.  
Assistant Professor ANDERSON and Mr. NOYES.

5. ORGANIC CHEMISTRY. — This course, with Course 6, continues through the junior year. The two courses are designed especially: (1) for those who are looking forward to positions as chemists in agricultural colleges or experiment stations, the United States Department of Agriculture, or similar places, and who need a knowledge of chemistry for itself; and (2) for those who are expecting to enter like positions in other sciences, and who will use their knowledge of chemistry in a secondary way. It consists of a systematic study, both from texts and in the laboratory, of the more important compounds in the entire field of organic chemistry. Especial attention is given to those compounds which are found in agricultural products or are manufactured from them. These include alcohols, acids, esters, fats, carbohydrates, proteins, etc. The work forms a foundation for courses in physiological chemistry and agricultural analysis, and thus for future work in agricultural chemical investigation. Prerequisites, Courses 1, 2, 3 and 4 (courses 3 and 4 will not be required as prerequisites for those majoring in other courses than chemistry). Juniors; those electing Course 5 are expected to elect Course 6. Lectures, 3 hours; laboratory, 4 hours. Credit, 5.

Associate Professor CHAMBERLAIN and Mr. FOWLER.

6. As stated under Course 5.

7. AGRICULTURAL CHEMISTRY. — This course and Course 8 are designed as alternatives for Courses 5 and 6. They are especially intended for those who, having completed Courses 1 and 2, do not care to continue the study of chemistry for itself, but are planning to enter practical agricultural work and desire a further knowledge of chemistry as it is related directly to practical agriculture and agricultural problems. The work is planned in two parts, viz.: *Course 7, Inorganic Agricultural Chemistry*, the study of the general composition, properties and reactions of soils and fertilizers, and in addition to this the study of some of the

more important fungicides and insecticides, and the common materials of construction, such as tile, brick, cements, paints, oils, etc.; and *Course 8, Organic Agricultural Chemistry*, the study of the composition, physiological processes, uses and nutritive value of plants, and the composition and general processes of nutrition and growth of animals; also the study of products related to plants and animals, such as milk, butter, sugar, maple syrup, denatured alcohol, wood pulp, paper, etc. The treatment of the subject in both of these courses is entirely general, avoiding all complicated chemical facts and relationships, and endeavoring simply to make the student acquainted with the chemical aspects of agricultural processes and products. Prerequisites, Courses 1 and 2. Juniors; those electing Course 7 are expected to elect Course 8. Lectures, 2 hours; laboratory, 2 hours. Credit, 3.

Associate Professor CHAMBERLAIN and Mr. FOWLER.

8. ORGANIC AGRICULTURAL CHEMISTRY.—As stated under Course 7.

9. QUANTITATIVE ANALYSIS.—Instruction in this course includes the gravimetric and volumetric determinations of some of the commoner metals and non-metals in minerals and industrial products. Aside from teaching accurate observation and care in manipulation, it is intended for those who would learn the exact methods for determining the elements, particularly, in inorganic substances, and is the forerunner of other courses intended to fit men to become expert analysts. Talbot's "Quantitative Chemical Analysis" is used as a text. Prerequisites, Courses 1, 2, 3 and 4. Juniors; lecture, 1 hour; laboratory, 8 hours. Credit, 5.

Professor WELLINGTON and Associate Professor PETERS.

10. AGRICULTURAL CHEMICAL ANALYSIS.—In this course and Course 11 the methods previously studied, and other approved methods, are applied to the examination of agricultural materials. The analysis of fertilizers, insecticides, fungicides and soils is followed by that of cattle foods, dairy products, sugars, starches and allied substances. Prerequisite, Course 9. Juniors; lecture, 1 hour; laboratory, 8 hours. Credit, 5.

Professor WELLINGTON, Associate Professor PETERS.

11. AGRICULTURAL CHEMICAL ANALYSIS.—As stated under Course 10. Prerequisite, Course 10. Seniors; lecture, 1 hour; laboratory, 8 hours. Credit, 5.

Professor WELLINGTON and Assistant.

13. PHYSIOLOGICAL CHEMISTRY.—This course is intended to be supplementary to Courses 5 and 6 and Courses 7 and 8. To those who expect to take up scientific work in botany, agronomy, animal husbandry and bacteriology, and who have had Courses 5 and 6, it will give acquaintance with the chemistry of the physiological processes in plants and animals, by means of which some of the important organic compounds studied in Courses 5 and 6 are built up in the living organism or are used as food by it. In the lectures the study of food and nutrition as related to both human and domestic animals is the principal subject. In the laboratory,

experimental studies are made of the animal body and the processes and products of digestion, secretion and excretion. The course gives additional training in the chemical problems of agricultural experiment station work, especially those connected with investigations in animal and plant nutrition. To those who will not take up scientific lines of work, but will follow practical agriculture, it will give an opportunity for a more detailed study of the chemistry and physiology of problems which were treated generally in Courses 7 and 8. Prerequisites, preferably, Courses 5 and 6 or 7 and 8. Seniors; lectures, 2 hours; laboratory, 2 hours. Credit, 3.

Associate Professor CHAMBERLAIN and Mr. FOWLER.

[GENERAL STATEMENT CONCERNING COURSES 12, 14 AND 16.—Each student electing either of these courses will be required to take up and follow out some special line of work, the object being to acquaint him with methods of original inquiry. A single concrete example may be found in a comparative study of the different methods for the determination of the several forms of nitrogen. A thesis may not be required, but frequent consultation of the literature bearing on the subject will be necessary. These courses are valuable for all chemists, and particularly so for those intending to take up experiment station work. A student may choose any one but not two of these separate courses.]

12. SPECIAL WORK IN AGRICULTURAL CHEMICAL ANALYSIS.—Topics for laboratory study will be assigned to each student. Prerequisite, Course 11. Seniors; laboratory, 10 hours. Credit, 5.

Professor WELLINGTON and Assistant.

14. SPECIAL WORK IN PHYSIOLOGICAL AND ORGANIC AGRICULTURAL CHEMISTRY.—In this course, as in Courses 12 and 16, the student will be able to give his attention primarily to one line of chemical study. To those whose tastes and interests are in connection with the organic and physiological problems of agricultural chemistry, many subjects of study present themselves, among which may be mentioned: proteins, carbohydrates, fats, organic nitrogenous compounds in fertilizers and soils and their relation to plants, the commercial production of alcohol from agricultural products, digestion and dietary studies, etc. Prerequisites, Courses 5, 6 and 13. Seniors; laboratory, 10 hours. Credit, 5.

Associate Professor CHAMBERLAIN and Mr. FOWLER.

16. SPECIAL WORK IN PHYSICAL CHEMISTRY.—The field of agricultural chemistry offers many problems that have been attacked through the methods of physical chemistry; such, for example, are the hydrolysis of salts and of minerals and the absorption of salts and fertilizers by soils. Each student will select one line of work and follow it through the course, repeating some of the original work. Prerequisite, Course 15. Laboratory, 10 hours. Credit, 5.

Assistant Professor ANDERSON.

15. PHYSICAL CHEMISTRY.—A résumé of general chemistry from the viewpoint of physical chemistry and the application of physical chemistry to agricultural chemistry. Prerequisite, Course 9. Juniors and seniors; lectures, 2 hours; laboratory, 2 hours. Credit, 3.

Assistant Professor ANDERSON.

18. HISTORY OF CHEMISTRY. — An exposition of the development of chemical knowledge from the earliest times to the present. Although the entire history will be included, the larger portion of it will receive only brief mention in order that the questions of vital interest in modern life and industry may be studied at more length. Particular attention will be given to the questions of plant and animal industry. Chemists are strongly advised to take this course. [Not given in 1912-13.] Seniors; lectures, 2 hours. Credit, 2. Professor WELLINGTON.

#### ENTOMOLOGY.

Professor FERNALD, Associate Professor CRAMPTON, Assistant Professor GATES, Mr. MARTIN, Mr. DAVIS.

##### *Elective Courses.*

1. GENERAL AND ECONOMIC ENTOMOLOGY. — Course 1 comprises a general introduction to the study of insects, including studies on their structure as applied to their identification; the principles of classification; a systematic examination of the different groups and of the most important economic insects of each group, including their life histories and habits, recognition of their work as shown in the collections, and methods for their control. The most important insecticides and their preparation and application are also treated. Students electing Course 1 are expected to take Course 2. Juniors; 3 lecture periods. Credit, 3. Professor FERNALD.

2. GENERAL AND ECONOMIC ENTOMOLOGY. — A continuation of Course 1, with laboratory and field work on methods of collecting, preserving and studying insects and their work. Juniors; 2 laboratory or field periods. Credit, 3. Professor FERNALD.

3. ADVANCED ENTOMOLOGY. — This course is subdivided, the time spent on the various subdivisions differing somewhat according to the particular needs of those taking it; and it is to a large degree given in the form of individual instruction, special attention being paid to the pests attacking the particular crops in which the student is most interested. The student may specialize in fruit pests, market-garden pests, greenhouse pests, field crop pests, etc., to a large extent, in accordance with his plans for future work.

*A. Morphology.* — Careful studies of the structure of insects belonging to each of the larger and more important orders, together with lectures on the subject, followed by the identification of insects of each of these groups and the study of the collections, to teach the use of the analytical tables and of structural characters in the determination of insects.

*B. Histology.* — Lectures on the internal anatomy and histology of the various organs, with particular reference to those affected by the various insecticides.

*C. Insecticides and Apparatus.* — Lectures on the chemistry, preparation and application of the different insecticides, their merits and defects; tests for detecting adulterations; comparative tests of nozzles and other apparatus; and a study of other methods of insect control, together with laboratory work.

*D. Coccidology.*—Laboratory work on methods of preserving, mounting and identifying scale insects, particular attention being given to those of greatest economic importance.

*E. Bibliography.*—Studies of the various entomological publications and of the methods of finding the literature on any insect.

*F. Special Studies.*—In these studies the insects most closely related to the future occupation of the student will receive attention. The results of these studies are brought together in the form of an essay or thesis; this will include all the essentials of what is known of the life history, habits and injuries caused by each insect studied, together with methods of treatment, and a list of the best articles found in the course of the work. Comstock's "Manual for the Study of Insects" is used in the laboratory work. Seniors; prerequisite, Entomology 2; students electing Course 3 are expected to take Course 4; 1 1-hour lecture period and 3 2-hour laboratory or field periods. Credit, 4.

Professor FERNALD, Associate Professor CRAMPTON, Mr. MARTIN.

4. ADVANCED ENTOMOLOGY.—As stated in Course 3. Prerequisite, Course 3.

5. FOREST INSECTS.—A study of insects injurious to forest trees and of methods for their control, with laboratory and field work on these insects, and a study of what has been published about them. Seniors; prerequisites, Entomology 1 and 2; 1 lecture and 2 2-hour laboratory or field exercises. Credit, 3.

Professor FERNALD.

8. BEEKEEPING.—This course comprises a general consideration of the biology of the honey bee and of practical beekeeping. Some topics covered are: phylogeny, life history, general behavior and instincts, structure, products, relations of bees to plants and the honey flora. The course aims particularly to afford first-hand, practical experience with bees, to the end of enabling their proper maintenance for any purpose, horticultural, educational or apicultural. Bee diseases, a thorough understanding of which is fundamental to the industry, are considered. So far as possible the work is made individual in constructing materials and apparatus. Juniors; seniors may elect. Courses 1 and 2 form a desirable preparation; 2 lectures; 1 2-hour laboratory period. Credit, 3.

Assistant Professor GATES, Mr. DAVIS.

[10.<sup>1</sup> ADVANCED BEEKEEPING.—This course deals with the advanced and special problems of the beekeeper. Besides considering those difficulties which at present confront the industry, subjects necessarily of limited treatment in the previous course are expanded for the development of particular technique and manipulation. Apiary management and the principles of queen rearing are practiced in accord with the season. The course should further qualify for apicultural instruction, inspection service, and afford familiarity with the special literature and method needed in investigation and research. The policy of individual instruction will be

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<sup>1</sup> The announcement of this course is made provisionally.



contained in so far as practicable. Primarily for seniors, but juniors may elect; prerequisite, Course 8; 1 lecture, 1 laboratory period. Credit, 2. Assistant Professor GATES.]

#### MATHEMATICS AND CIVIL ENGINEERING.

Professor OSTRANDER, Mr. DUNCAN, Mr. MACHMER, Mr. PARSONS.

##### *Required Courses.*

1. HIGHER ALGEBRA. — A brief review of radicals, quadratic equations, ratio and proportion, and progressions; graphs, binomial theorem, undetermined coefficients, summation of series, continued fractions, determinants, permutations and combinations, logarithms, theory of equations. Reitz and Crathorne's "College Algebra." Freshmen; 3 hours a week. Credit, 3. Mr. MACHMER and Mr. PARSONS.

2. HIGHER ALGEBRA. — As stated under Course 1.

Mr. MACHMER.

3. SOLID GEOMETRY. — Theorems and exercises on the properties of straight lines and planes, dihedral and polyhedral angles, prisms, pyramids and regular solids; cylinders, cones and spheres; spherical triangles and the measurement of surfaces and solids. Wentworth and Smith's "Solid Geometry." Freshmen; required unless accepted for admission; 2 hours a week. Credit, 2. Mr. DUNCAN.

4. PLANE TRIGONOMETRY (in Charge of Department of Physics). — The trigonometric functions as lines and ratios; proofs of the principal formulas, transformations; inverse functions, use of logarithms; the applications to the solution of right and oblique triangles; practical applications. Bowser's "Elements of Plane and Spherical Trigonometry." Required unless accepted for admission. Freshmen; 3 hours. Credit, 3.

Professor HASBROUCK and Captain MARTIN.

##### *Elective Courses.*

6. PLANE SURVEYING. — The elements of the subject, including the adjustment and use of the usual instruments. Text-book and lectures. Sophomores; 6 hours a week. Credit, 3.

Mr. DUNCAN and Mr. PARSONS.

7. ANALYTIC GEOMETRY. — A discussion of the geometry of the line, the circle, of conic sections and of the higher plane curves. Fine and Thompson's "Coördinate Geometry." Prerequisites, Mathematics 1, 2, 3 and 4. Primarily for juniors; 3 hours a week. Credit, 3.

Professor OSTRANDER.

8. DIFFERENTIAL AND INTEGRAL CALCULUS. — A first course in the subject, with some of the more important applications. Nichol's "Differential and Integral Calculus." Prerequisites, Mathematics 1, 2, 3, 4 and 7. Primarily for juniors; 5 hours. Credit, 5. Professor OSTRANDER.

10. **ADVANCED SURVEYING.**—Topographic and higher surveying, highway construction, earthwork, pavements and railroad construction. [Not given in 1912-13.] Text-book and lectures; 6 hours. Credit, 5.

Professor OSTRANDER.

11. **HYDRAULICS AND SANITARY ENGINEERING.**—Hydrostatics, theoretical hydraulics, orifices, weirs, pipes, conduits, water supply, hydraulic motors, sewers and sewage treatment. [Not given in 1912-13.] Text-book and lectures; 3 hours. Credit, 3.

Professor OSTRANDER.

12. **ELEMENTARY STRUCTURES.**—An elementary course in roofs and bridges. Text-book and lectures; 6 hours. [Not given in 1913-14.] Credit, 5.

Professor OSTRANDER.

13. **MATERIALS OF CONSTRUCTION, FOUNDATIONS AND MASONRY CONSTRUCTION.**—Text-book and lectures; 4 hours. [Not given in 1913-14.] Credit, 3.

Professor OSTRANDER.

15. **APPLIED MECHANICS.**—A course in applied mechanics, based on the calculus, with problems. Text-books and lectures. Prerequisites, Mathematics 7, 10; 3 hours. Credit, 3.

Professor OSTRANDER.

#### **MICROBIOLOGY.**

Professor MARSHALL.

[The program of courses in the recently established department of microbiology has not been completed. Work will be outlined in pathology, bacteriology, etc., but only the course in dairy bacteriology (Dairying 3) has yet been offered.]

3. **DAIRY BACTERIOLOGY.**—A study of bacteriology relative to market milk and dairy work. Prerequisites, Courses 1 and 2, and Bacteriology 1 (see Veterinary science); 3 2-hour laboratory periods. Credit, 3.

Professor MARSHALL.

#### **PHYSICS.**

Professor HASBROUCK, Captain MARTIN, Mr. BUTMAN.

[The fundamental and basic importance of the laws and phenomena of physics makes necessary no explanation of the introduction of this subject into the curriculum of an agricultural college. The logical development of the subject emphasizes the importance of physics as a science in itself. Special emphasis is laid, however, on the correlation of the principles studied with the sciences of agriculture, botany, chemistry, zoölogy, thus furnishing an extra tool by use of which the student's work in all the subjects may be more effective.]

#### *Required Course.*

1. **GENERAL PHYSICS.**—General physics covers mechanics of solids, mechanics of fluids, wave motion and heat. These topics are chosen for the required work because they are regarded as the most fundamental of all, and there is no part of the work in physics more necessary for the student who plans to take up practical farming. Course given by text-book and lectures. Sophomores; 4 hours' class-room work and 1 laboratory period. Credit, 5.

Professor HASBROUCK and Mr. BUTMAN.

*Elective Courses.*

2. GENERAL PHYSICS. — Electricity and light. Text-book, lectures, recitations and laboratory work. Sophomores; 2 hours of class-room work and 1 laboratory period. Credit, 3. Mr. BUTMAN.

3. OPTICAL INSTRUMENTS AND LIGHT. — Three-hour lecture course open to juniors and seniors; 3 hours. Credit, 3. Mr. BUTMAN.

4. ELECTRICITY AND HEAT. — Three-hour lecture and laboratory course open to juniors and seniors; 3 hours. Credit, 3. Mr. BUTMAN.

[Mathematics 4 (trigonometry) is, for convenience of grouping, listed under Mathematics, although in charge of the Department of Physics.]

**VETERINARY SCIENCE.**

Professor PAIGE, Assistant Professor GAGE.

[The courses in veterinary science have been arranged to meet the needs of students who purpose following practical agriculture, and of prospective students of human and comparative medicine.]

*Elective Courses.<sup>1</sup>*

1. INTRODUCTORY BACTERIOLOGY. — The object of this course is to acquaint the student with the various organisms found in air, water, soil, milk and the body, and with the relation of these organisms to such processes as decomposition, fermentation and digestion, and to the production of disease. Toxic substances resulting from the growth of organisms, and the anti-toxins used to counteract their action, are considered. Lectures, recitations and laboratory work. Seniors; 3 2-hour laboratory exercises. Credit, 3. Professor PAIGE and Assistant Professor GAGE.

2. BACTERIOLOGY. — A continuation of Course 1, taking up more advanced problems.

3. VETERINARY SCIENCE. — A course treating of veterinary hygiene, comparative anatomy and general pathology; veterinary materia medica and therapeutics; the theory and practice of veterinary medicine; general, special and operative surgery; and veterinary bacteriology and parasitology. Lectures, clinics, demonstrations and laboratory exercises. Must be followed by Course 4. Seniors; 5 hours. Credit, 5. Professor PAIGE.

4. VETERINARY SCIENCE. — As stated under Course 3.

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<sup>1</sup> Revision of the plan of courses, to be in effect in 1913-14, is announced.

**ZOÖLOGY AND GEOLOGY.**

Associate Professor GORDON, Mr. PARKER.

**ZOÖLOGY.***Required Course.*

1. ANIMAL MORPHOLOGY.—This course presents the underlying principles of biology and the zoölogical part of an introductory course. Laboratory dissection and lectures. Sophomores; 1 lecture hour and 2 2-hour laboratory periods. Credit, 3. Associate Professor GORDON.

*Elective Courses.*

3. COMPARATIVE INVERTEBRATE OR VERTEBRATE ZOÖLOGY.—These are parallel courses running throughout the year and are scheduled for the same hour. The student may elect one or the other, but not both in the same year. Comparative invertebrate zoölogy is intended primarily for future students in entomology, but is open to any one. Vertebrate zoölogy presents the comparative morphology of vertebrate forms. Parker & Haswell's "Text-book of Zoölogy," Vol. I., is required for invertebrate zoölogy, and Vol. II. for vertebrate zoölogy. Primarily for juniors; prerequisite for these courses, Course 1, or its equivalent; 1 lecture hour and 2 2-hour laboratory periods. Credit, 3. Associate Professor GORDON.

4. COMPARATIVE INVERTEBRATE OR VERTEBRATE ZOÖLOGY.—Continuation of Course 3. One lecture hour and 2 2-hour laboratory periods. Credit, 3. Associate Professor GORDON.

5. ADVANCED ZOÖLOGY.<sup>1</sup>—A course in animal parasites is offered to seniors. This course is a survey of this special field, with laboratory dissection, lecture work and outside reading. Not open to fewer than three students. Prerequisites, Course 1 and Course 3 in comparative invertebrate zoölogy; 2 1-hour periods, or their equivalent and 3 2-hour periods. Credit, 5. Associate Professor GORDON.

6. ADVANCED ZOÖLOGY.<sup>1</sup>—Course 5, continued. One 1-hour period and 2 2-hour periods. Credit, 3. Associate Professor GORDON.  
GRADUATE COURSES.—See "Graduate School."

**GEOLOGY.***Elective Course.*

2. ELEMENTARY GEOLOGY.—Rock-forming minerals; rock types; rock weathering; dynamical, structural and surface geology. Lectures, map and field work. Sophomores; 1 1-hour period and 2 2-hour periods. Credit, 3. Associate Professor GORDON.

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<sup>1</sup> Courses 5 and 6 are also available as a minor for the degrees of master of science or doctor of philosophy.

**DIVISION OF THE HUMANITIES.**

Professor SPRAGUE.

**ECONOMICS AND SOCIOLOGY.**

Professor SPRAGUE.

*Required Course.*

1. **POLITICAL ECONOMY.**—An introductory course. A study of the nature and scope of economics; the evolution and organization of the present economic system, the principles of production, exchange and consumption. This course will take up such topics as value, rentals, population, labor and its problems, capital, interest and profits, systems and factors of production, tariffs and commerce. Students will be called upon to analyze industrial plants in actual operation. Text-books, lectures and general discussions; a required course, but it may be taken in either junior or senior year; 3 hours. Credit, 3. Professor SPRAGUE.

*Elective Courses.*

2. **INDUSTRIAL PROBLEMS.**—A course in the most important industrial problems of the day, covering the methods of organizations of labor and capital, systems of industrial remuneration, means of securing industrial peace, legal status of labor unions and their activities, protective legislation for workmen and employers, the problems of immigration, the sweated industries, prison labor, child labor and industrial education. Text-book, with collateral readings, lectures and discussions; 3 hours. Credit, 3. Professor SPRAGUE.

3. **SOCIAL INSTITUTIONS AND SOCIAL PROBLEMS.**—This course is devoted to the study of the social institutions, such as the family, the church, State and property; and to such current social problems as divorces, race suicide, crime and prison reform, poverty and its relief, social effects of low wages, child labor, overwork, immigration and congestion of population. The later weeks of the semester will be given to a short introduction to sociological theory. The correctional and charitable institutions of Massachusetts will be studied in considerable detail. Readings, lectures, papers; 3 hours. Credit, 3. Professor SPRAGUE.

4. **MODERN SOCIAL REFORM MOVEMENTS.**—The history of property and its vital issues in modern times. The socialistic systems, anarchy and communism. Systems of workmen's insurance in Europe and America, and other methods of relief from the chances of life. Educational reforms, in process, to meet the demands of a new age, and legislative remedies for the evils of social change and maladjustment. The crisis of Christianity under modern capitalized industrialism. These topics indicate the nature of the subjects studied. This course follows Economics 3. Three hours. Credit, 3. Professor SPRAGUE.

5. PUBLIC FINANCE, MONEY AND BANKING.—This course follows Economics 1. It will take up taxation and the various systems for collecting public revenue in Europe and America, with the problems involved; the history of money and the systems of banking and finance now in operation; the causes and problems of economic crises and depressions; the currency problems of the United States. Readings, lectures and discussions; 3 hours. Credit, 3. Professor SPRAGUE.

6. ECONOMIC HISTORY.—This course will be divided between the economic history of Europe and that of America. An outline history will be followed with special study of selected epochal periods and important topics. Three hours. Credit, 3. Professor SPRAGUE.

8. ANTHROPOLOGY; THE HISTORY OF HUMAN CIVILIZATION.—The evolutionary origin and history of man; characteristics of primitive men, departure from the animal status, and the beginnings of civilization; development of industries, arts and sciences; the growth of languages, warfare, migrations and social institutions; a study of the powerful natural and human forces that have brought man from the early stages to modern conditions, will constitute the subject matter of the course. Three hours. Credit, 3. Professor SPRAGUE.

#### HISTORY AND GOVERNMENT.

Associate Professor EYERLY, Mr. HOLCOMB.

##### *Elective Courses.*

1. ELEMENTS OF POLITICAL SCIENCE.—Nature and scope of political science; origin and evolution of the State; systems of government in the principal European States; organization and working of the national and of the State governments of the United States; relation of government to political parties and to public opinion; the functions of government as related to labor and commerce. Three hours. Credit, 3.

Associate Professor EYERLY.

2. LOCAL POLITICAL INSTITUTIONS.—A comparative study of the organization, functions and achievements of country and city groups, especially as these are concerned with such matters as taxation, finance, licenses, franchises, public ownership, highways, transportation and communication, water supply, fire protection, public lighting, markets, food inspection, garbage and sewage disposal, infectious diseases, housing conditions, police force, parks and playgrounds, libraries, schools, care of dependents. Three hours. Credit, 3. Associate Professor EYERLY.

3. THE HISTORY OF NEW ENGLAND.—In this course, New England is regarded as a unit. Although the history of agriculture and rural life is treated with special fulness, ample attention is given to political, religious and ethical history. It is hoped that the student will not only be led to an intelligent understanding of present economic conditions, but will also be imbued with a progressive loyalty to the highest ideals of the New England of the past. Lectures and required reading; 3 hours. Credit, 3. Mr. HOLCOMB.

5. **THE HISTORY OF IDEALS.** — This course treats history from the idealistic rather than from the economic, point of view. It attempts to define the great ideals which have impelled some of the most important social, political, esthetic, scientific, ethical and religious movements of medieval and modern history, and to trace the causes of the success or failure of the movements to which these ideals have led. Christianity, including monasticism, modern Catholicism and Protestantism; medieval art and architecture; the modern scientific movement; and social and political democracy will be treated historically from this point of view. Lectures and reading; 3 hours. Credit, 3. Mr. HOLCOMB.

#### LANGUAGES AND LITERATURE.

Professor MILLS.

#### LANGUAGES AND LITERATURE: ENGLISH, JOURNALISM AND PUBLIC SPEAKING.

Associate Professor NEAL, Professor LEWIS, Assistant Professor SMITH, Mr. WATTLES, Mr. PRINCE, Miss GOESSMANN.

#### ENGLISH.

##### *Required Courses.*

1, 2. **FRESHMAN ENGLISH.** — Composition; introduction to literature. Recitations, laboratory practice and lectures; theme writing; conferences. Text-book and laboratory manual, Neal's "Thought-building in Composition." Freshmen; 4 hours. Credit, 4.

Associate Professor NEAL, Assistant Professor SMITH, Mr. WATTLES, Mr. PRINCE.

3, 4. **SOPHOMORE ENGLISH.** — Composition; literature. Prerequisite, Courses 2 and 3 respectively; sophomores; 2 hours. Credit, 2.

Professor LEWIS and Miss GOESSMANN.

##### *Elective Courses in English Language and Literature.*

7. **EXPOSITORY WRITING.** — The principles of exposition, with exercises in composition. Subjects will be largely found in current events and contemporary thought, and treated editorially. A foundation course in more advanced composition, primarily for juniors but open to seniors; advised for those who plan to take Course 8. First given in 1912-13. Two hours, with a third hour at the option of the instructor. Credit, 2.

Mr. WATTLES.

8. **EXPOSITORY WRITING.** — The principles of exposition with especial reference to technical writing, including the writing of bulletins; some attention also to the more popular exposition of scientific facts. Primarily for juniors but open to seniors. First offered in 1912-13. Two hours, with a third hour at the option of the instructor. Credit, 2.

Mr. WATTLES.

9, 10. **CULTURAL READING.** — Not given in 1912-13.

13. ENGLISH WRITERS AND THOUGHT.—Studies, laboratory problems, readings, and reports in some period of English literature. Three hours. Credit, 3. Assistant Professor SMITH.

14. ENGLISH WRITERS AND THOUGHT.—As in Course 13. Three hours. Credit, 3.

15. PROSE MASTERS OF THE NINETEENTH CENTURY.—A sympathetic study of the writings of Ruskin, Carlyle, Newman, Arnold and Stevenson. Junior and senior course; 3 hours. Credit, 3. Professor LEWIS.

16. POETS OF THE VICTORIAN AGE: BROWNING, TENNYSON AND ARNOLD.—This course will deal especially with the ethical and religious ideals of these poets as expressed in their most serious poems. Junior and senior course; 3 hours. Credit, 3. Professor LEWIS.

17. ADVANCED COMPOSITION AND LITERATURE.—The reading and study of writings that are typical of literary style or form, especially in description and narration, and the writing of exercises involving problems of the same general sort as those illustrated by the readings. A good deal of fiction will probably be read, of which more or less will be found in the novels and short stories of our own day. On this study will be based the work in composition. Primarily for seniors but open to juniors. Two hours, with a third hour at the option of the instructor. Credit, 2.

Associate Professor NEAL.

18. ADVANCED LITERATURE.—This course varies from year to year. It will usually provide opportunity either for intensive study of great writers or for study of the historical development or the structure and characteristics of literary types. Three hours. Credit, 3.

Associate Professor NEAL.

#### JOURNALISM.

[The courses in journalism emphasize rural journalism. They aim to acquaint the student with the elementary problems and theory of journalism as a profession or vocation, and to exercise him, as far as conditions permit, in the commoner aspects of journalistic work, such as news-gathering, news-writing, desk-editing and editorial writing. By rural journalism is meant the application of journalistic principles in getting and suitably presenting material adapted to the non-urban rather than to the urban or metropolitan reader, so far as their interests are distinct. This includes agricultural journalism, but is by no means confined to that. Members of the classes supply, under the head "The Bay State Ruralist," a feature page for the "Springfield Sunday Union." Members of all classes may be required to turn in copy regularly for such disposition as the instructor may determine, and must have free time for covering stories. Students wishing to proceed beyond elementary study are urged to consult with the instructor before making their election in other subjects for the junior-senior years, in order that the most helpful program of work may be arranged.]

#### *Elective Courses.*

1. INTRODUCTION TO JOURNALISM.—The foundation conceptions and aims of journalism; practice in the simple forms of journalistic writing. Prerequisite to all other work in journalism, and valuable also to students



preparing for practical farming, agricultural or general science, rural education, etc., as a vocation. Two hours, with a third hour at option of the instructor. Credit, 2.

Associate Professor NEAL, Assistant Professor SMITH.

2. REPORTING. — News-gathering and news-writing. This includes the gathering and presentation of industrial and agricultural information, campus news or other stories, as may be directed. Courses 1 and 2 are the foundation courses in journalism. Students admitted to 2 who have not had 1 will be required to do extra work. Two hours, with a third hour at the option of the instructor. Credit, 2.

Associate Professor NEAL.

3. JOURNALISTIC PRACTICE. — The gathering and preparation of material for publication. The class may be organized as a staff. Prerequisite, course 1 or its equivalent. Two hours, with a third hour at the option of the instructor. Credit, 2.

Associate Professor NEAL.

4. JOURNALISTIC PRACTICE. — As stated under Course 3.

5. ADVANCED JOURNALISTIC PRACTICE. — Informal; students will be assigned work as editorial assistants or writers, or otherwise employed in some form of journalistic activity. Study of particular forms of journalistic writing, of special subjects and their journalistic presentation, of particular kinds of periodical, or of current topics may be directed, and the presentation of a thesis may be required. Hours to be arranged. Two hours. Credit, 1.

Associate Professor NEAL.

6. ADVANCED JOURNALISTIC PRACTICE. — As stated under Course 5.

#### PUBLIC SPEAKING.

##### *Required Courses.*

1. FRESHMAN PUBLIC SPEAKING. — Freshman public speaking is required in either the first or the second semester at the option of the instructor. The course is concerned with the actual problems which confront the man who would speak convincingly and persuasively. Some attention is given to breath control and development of speaking voice, considerable attention to pronunciation and enunciation, and a large amount of attention to the preparation and delivery of extempore speeches. Text-book, Shurter's "Extempore Speaking," supplemented by lectures and discussions. Freshmen; 1 hour. Credit, 1.

Mr. PRINCE.

2. FRESHMAN PUBLIC SPEAKING. — As stated under Course 1. Required of all freshmen who are not assigned to take Course 1.

8. OCCASIONAL ORATORY. — Exercises for voice and gesture; a study of the elements of vocal expression and action; speeches on assigned topics; prescribed reading; the preparation and delivery of a formal oration or two. It is especially recommended for those who desire to enter the Flint contest. Two hours. Credit, 2.

Assistant Professor SMITH.

**LANGUAGES AND LITERATURE: GERMAN.**

Assistant Professor ASHLEY, Mr. JULIAN.

*Required Courses.*

1. **ELEMENTARY GERMAN.**—Grammar and composition; the reading of short stories, poems, plays, etc. Especial attention is given to oral questioning and answering in German, and to translation of English into German. Required of those presenting French for entrance who do not continue that language and have not studied German. Freshmen; open upon arrangement to other students; 4 hours. Credit, 4. Mr. JULIAN.

2. **ELEMENTARY GERMAN.**—As stated under Course 1. Prerequisite, Course 1.

3. **INTERMEDIATE GERMAN.**—Rapid reading of selected works from Schiller, Goethe, Lessing and others; review of grammar and dictation in German; outside readings. Required of freshmen who present German for entrance and do not take French. Freshmen; open upon arrangement to other students; 4 hours. Credit, 4. Assistant Professor ASHLEY.

3A. **INTERMEDIATE GERMAN.**—Rapid reading of prose works, such as Sudermann's "Frau Sorge," and dramas, such as "Wilhelm Tell" and "Die Journalisten." Required of sophomores who took Courses 1 and 2 as freshmen. Mr. JULIAN.

4. **INTERMEDIATE GERMAN.**—As stated under Course 3. Prerequisite, Course 3.

4A. **INTERMEDIATE GERMAN.**—As stated under Course 3A. Open to students who have completed German 3A; 3 hours. Credit, 3.

5. **ADVANCED GERMAN.**—Literary study of the classicists,—Schiller's "Wallenstein," Lessing's "Nathan der Weise," Goethe's "Iphigenia," etc.; collateral readings in German and class-room reports. Conducted in German. Prerequisite, Course 4. Sophomores; required of those who took German 3 and 4 as freshmen; open upon arrangement to other students; 3 hours. Credit, 3. Assistant Professor ASHLEY.

*Elective Courses.*

6. **ADVANCED GERMAN.**—As stated under Course 5. Sophomores; open upon arrangement to other students. Prerequisite, Course 5; 3 hours. Credit, 3. Assistant Professor ASHLEY.

7. **MODERN GERMAN.**—Reading of articles from the best modern German periodicals, such as "Ueber Land und Meer;" conversation and composition work based on text. "Ferien in Deutschland," prepared by instructor; 3 hours. Credit, 3. Assistant Professor ASHLEY.

8. **MODERN GERMAN.**—As stated under Course 7.

9. SCIENTIFIC GERMAN.—Reading of modern magazine articles and works in German of a scientific nature. Different work assigned according to needs of individual students. Open to juniors who have completed Course 4A or more advanced work. Three hours. Credit, 3.

Assistant Professor ASHLEY.

10. SCIENTIFIC GERMAN.—As stated under Course 9.

11. GERMAN LITERATURE.—Advanced language and literary study. Conducted entirely in German. Lectures on German literature and history; life, customs and travel in Germany. Collateral readings, including masterpieces of different epochs, such as "Niebelungenlied," Goethe's "Faust," and one modern typical drama. Prerequisite, Course 6 or 10.

Assistant Professor ASHLEY.

12. GERMAN LITERATURE.—As stated under Course 11.

#### LANGUAGES AND LITERATURE: FRENCH.

Assistant Professor MACKIMMIE, Mr. HARMOUNT.

1, 2. ELEMENTARY FRENCH.—The essentials of grammar are rapidly taught. Thieme and Effinger's "French Grammar" will be used during the first semester. A large amount of reading is required. Required of freshmen presenting German for entrance who do not continue that language and have not studied French; open upon arrangement to other students. Freshmen; 4 hours. Credit, 4.

Mr. HARMOUNT.

3. INTERMEDIATE FRENCH (third year).—Training for rapid reading; the reading of a number of short stories, novels and plays; composition; reports on collateral reading from periodicals and scientific texts in the library. Required of freshmen who present two years of French for entrance and do not take German, and of sophomores who take Courses 1 and 2 as freshmen; open upon arrangement to other students; 4 hours. Credit, 4.

Assistant Professor MACKIMMIE, Mr. HARMOUNT.

4. INTERMEDIATE FRENCH.—As stated under Course 3, but not required of sophomores who take Courses 1 and 2 as freshmen. Prerequisite, Course 3.

Assistant Professor MACKIMMIE.

5. ADVANCED FRENCH (fourth year).—A reading course; Balzac's "Eugenie Grandet" and "Le Père Goriot" and other masterpieces of the nineteenth century; Brunetière's "Honoré de Balzac" and Harper's "Masters of French Literature;" readings in the library and written reports. Required of sophomores who take Courses 3 and 4 as freshmen; open upon arrangement to other students. Prerequisite, Course 4; 3 hours. Credit, 3.

Assistant Professor MACKIMMIE, Mr. HARMOUNT.

#### *Elective Courses.*

6. ADVANCED FRENCH (fourth year).—A general view of the history of French literature; Kastner and Atkins' "History of French Literature." Several plays of the great classical dramatists will be read. Individual

conferences on outside reading selected by the student. Prerequisite, Course 5. Sophomores; open upon arrangement to other students; 3 hours. Credit, 3.

Assistant Professor MACKIMMIE.

7, 8. **SCIENTIFIC FRENCH.**—This course is planned to meet the requirements of the individual student and aims to equip him with exact English equivalents for the French scientific terms in his particular science. Word lists of scientific terms will be required and also weekly readings and reports from scientific works in the subject in which he is majoring. Several scientific readers will be read. Three hours. Credit, 3. Mr. HARMOUNT.

9, 10. **MODERN FRENCH LITERATURE.**—The outline is intended as a suggestion. The exact subject matter of the course will be determined when the men are enrolled. The object of this course is to give an introduction to recent movements in French literature. In the drama, readings from Augier, A. Dumas, fils, Delavigne; in the novel, from Flaubert, the de Goncourts, Zola; in criticism, from Taine, Renan, Sainte-Beuve; for the literary history of the period Lanson's "Histoire de la Litterature Française." Prerequisite, the required French. Juniors or seniors; 3 hours. Credit, 3.

Assistant Professor MACKIMMIE.

#### **LANGUAGES AND LITERATURE: SPANISH.**

Assistant Professor MACKIMMIE.

##### *Elective Courses.*

1. **ELEMENTARY SPANISH.**—Grammar, with special drill in pronunciation; reading from a simple reader. Seniors or juniors; open upon arrangement to other students; 3 hours. Credit, 3.

Assistant Professor MACKIMMIE.

2. **MODERN SPANISH AUTHORS.**—Reading from modern Spanish novel and drama. Prerequisites, Course 1. Seniors or juniors; open upon arrangement to other students; 3 hours. Credit, 3.

Assistant Professor MACKIMMIE.

#### **LANGUAGES AND LITERATURE: MUSIC.**

Assistant Professor ASHLEY.

##### *Elective Courses.*

1. **HISTORY AND INTERPRETATION OF MUSIC.**—History of music among the ancients; medieval and secular music; epoch of vocal counterpoint; development of monophony opera and oratorio; life and works of the greatest representatives of the classical school—Bach, Händel, Haydn, Gluck and Mozart. One hour. Credit, 1.

Assistant Professor ASHLEY.

2. **HISTORY AND INTERPRETATION OF MUSIC.**—A continuation of Course 1. The Romantic school; Beethoven, Schubert, Weber, Mendelssohn, Schumann, Chopin, Berlioz and Liszt; Wagner and the opera. The Modern school and Modern composers. One hour. Credit, 1.

Assistant Professor ASHLEY.

**DIVISION OF RURAL SOCIAL SCIENCE.**

PRESIDENT BUTTERFIELD.

**AGRICULTURAL ECONOMICS.**

Associate Professor CANCE.

*Required Courses.*

2. AGRICULTURAL INDUSTRY AND RESOURCES. — A descriptive course dealing with agriculture as an industry and its relation to physiography, movement of population, supply of labor, commercial development, transportation, public authority and consumers' demand. The principal agricultural resources of the United States will be studied with reference to commercial importance, geographical distribution, present condition and means of increasing the value of the product and cheapening cost of production. Lectures, assigned readings, class topics and discussions. Sophomores; 3 hours. Credit, 3. Associate Professor CANCE.

*Elective Courses.*

4. ELEMENTS OF AGRICULTURAL ECONOMICS. — This course is designed to follow the required work in the elements of economics. It will consider the economic principles underlying the welfare and prosperity of the farmer and those institutions upon which his economic success depends; the economic elements in the production and distribution of agricultural wealth; means of exchange; determination of price; speculation; problems of land tenure and land values; taxation of land values; the maintenance of the economic status of the farmer; and the relation of the farmer to the State. Lectures, text, readings, topics and field work; 3 hours. Credit, 3. Associate Professor CANCE.

5. HISTORICAL AND COMPARATIVE AGRICULTURE. — Recommended to students in journalism or education. A general survey of agriculture, ancient and modern; feudal and early English husbandry; the later development of English agriculture; the course of agriculture in the United States, with special emphasis on present conditions and the history of agriculture in New England. An attempt will be made to measure the influence of times, peoples and countries in producing different systems of agriculture, and to ascertain the causes now working to effect agricultural changes. Lectures, readings and library work. Seniors and juniors; open to other students upon arrangement; prerequisite, Course 4 or equivalent; 3 hours. Credit, 3. Associate Professor CANCE.

6. CO-OPERATION IN AGRICULTURE. — The course contemplates a somewhat comprehensive view of the history, principles and business relations of agricultural organization for profit. (1) A survey of the development and progress, the methods and economic results, of the farmers' organizations and great co-operative movements in the past; (2) the phases of business organization of agriculture abroad, and the present aspects and

tendencies in the United States; (3) the principles underlying successful co-operative endeavor among farmers, and practical working plans for co-operative associations, with particular reference to the marketing of perishable products. Lectures, text, assigned reading and practical exercises; 2 or 3 hours. Credit, 2 or 3. Associate Professor CANCE.

7. PROBLEMS IN AGRICULTURAL ECONOMICS.—An advanced course for students desirous of studying more intensively some of the problems immediately affecting the welfare of the farmer and society. Some of the problems that may be studied are: land problems,—land tenure, size of farms, causes affecting land values, private property in land, taxation of farm values, special problems,—cost of producing farm products, farm labor in New England, immigration, shifting of the rural population. Opportunity will be given, if practicable, for field work, and students will be encouraged to pursue lines of individual interest. Seniors and juniors; open upon arrangement to other students; enrollment subject to approval of instructor; 2 or 3 hours a week. Credit, 2 or 3.

Associate Professor CANCE.

8. THE AGRICULTURAL MARKET.—This course contemplates a study of the forces and conditions which determine the prices of farm products, and the mechanism, methods and problems concerned with transporting, storing and distributing them. Such topics as supply and demand, course of prices, transportation by freight, express and trolley, terminal facilities, the middleman system, speculation in agricultural products, protective legislation, the retail market, direct sales and the like will be taken up. The characteristics and possibilities of the New England market will be given special attention. Lectures, readings, assigned studies and field work. [Not offered in 1913–14.] Juniors and seniors; 2 or 3 hours a week. Credit, 2 or 3.

Associate Professor CANCE.

9. SEMINAR.—Research in agricultural economics and history: New England agriculture to 1860. Library work and reports. If desirable some other topic may be substituted. Hours to be arranged. Credit, 1.

Associate Professor CANCE.

10. SEMINAR.—As stated in Course 9.

#### AGRICULTURAL EDUCATION.

Professor HART, Associate Professor MORTON.

##### *Elective Courses.*

1. MEANING OF EDUCATION (PSYCHOLOGY).—A study of the development, structure and function of the nervous system with reference to the sense organs; relation of mind to the nervous system; growth and nature of mental processes; the activities of the mind in the process of learning. Text-book, lectures, discussion, and collateral readings and reports; 3 hours. Credit, 3.

Professor HART.

2. VOCATIONAL EDUCATION (HISTORY AND PHILOSOPHY).—A survey of educational, religious and social movements with reference to their vocational aspects; the growth of educational institutions as influenced by science and industry. Lectures, collateral readings, reports, and a thesis on some phase of industrial education; 3 hours. Credit, 3.

Professor HART.

3. RURAL SCHOOL PROBLEMS.—A study of agricultural education; the theory and practice of teaching; school organization and methods of instruction; the place and function of agriculture in the course of study. Primarily for those who have had Course 1 or 2; 2 hours. Credit, 2.

Professor HART.

4. RURAL SCHOOL PROBLEMS.—Designed primarily for those who intend to teach; may be taken in connection with Course 3. The work consists of the selection and review of such parts of the courses in agriculture, horticulture and the biological and physical sciences as are adapted to the work of the public schools; planning, and practical work in school gardens; decoration of school grounds; equipment and conduct of playgrounds. One lecture period, 2 two-hour laboratory periods. Credit, 3.

Professor HART, Associate Professor MORTON.

5. SEMINAR IN EDUCATION.—For students who have had courses 1, 2 and 3, or an equivalent. Topics that may be taken up for rather exhaustive study are: rural school supervision, and rural school surveys, and secondary school agriculture. Seniors and graduate students; 2 hours. Credit, 2.

Professor HART.

6. SEMINAR IN EDUCATION.—As stated under Course 5.

#### RURAL SOCIOLOGY.

Associate Professor EYERLY, President BUTTERFIELD, Professor HART, Mr. HOLCOMB.

##### *Elective Courses.*

2. THE RURAL COMMUNITY.—A broad survey of the field of rural sociology, including such topics as the movements of the rural population, the social conditions and life of rural people, the influence of rural life, the description of the various social institutions of the rural community, an analysis of the fundamental problems of rural life, and the means of developing and redirecting the life of the rural community. Lectures, readings and essays on assigned topics; 3 hours. Credit, 3.

President BUTTERFIELD and Associate Professor EYERLY.

3. THE LITERATURE OF RURAL LIFE.—A critical and appreciative study of writers, both in prose and poetry, who have interpreted nature from the viewpoint of the lover of country life, and those who have idealized agriculture, horticulture and other rural pursuits, together with those who have upheld as an ideal the development of a rural environment in cities; 3 hours. Credit, 3.

Mr. HOLCOMB.

4. RURAL LAW.—The work of this course will cover such points as land titles, public roads, rights incident to ownership of live stock, contracts, commercial paper and distinctions between personal and real property. Text, written exercises, lectures, and class discussions; 1 hour. Credit, 1.

Professor HART.

5. THE SOCIAL CONDITIONS OF THE RURAL PEOPLE.—Composition of the rural population; vital statistics; nature, extent and causes of diseases and accidents; health agencies of control; extent and causes of delinquency and dependency; conditions of temperance, of sexual morality and family integrity; child labor; woman's work and position; relation of employer to employee; standard of living; size of family; cultural ideals; community consciousness and activity; standards of business conduct and of political ethics; 3 hours. Credit, 3.

Associate Professor EYERLY.

6. SOCIOLOGICAL ASPECTS OF CO-OPERATION AMONG FARMERS.—An historical sketch of the origin, extent and success of co-operation among farmers in the various European countries and in the United States; personal qualities and social conditions necessary to successful co-operative endeavor; the various forms of co-operative organization viewed in their industrial, intellectual and moral aspects; the influence of co-operation on the farmer's individualism, conservatism, self-help, thrift, contentment and on agrarian legislation, scientific agriculture and farm labor; the relation of co-operation to neighborhood life, to community pride and loyalty, to further associated effort, to class stability, solidarity and status; the demand of co-operation for a new type of leadership; the relation of co-operation to socialism and the competitive system; 3 hours. Credit, 3. [Given in 1912-13; not given in 1913-14.]

Associate Professor EYERLY.

7. RURAL INSTITUTIONS.—A study of the organized agencies by which rural communities carry on their various forms of associated life; particularly a study of the ways by which the domestic, economic, cultural, religious and political institutions contribute to rural betterment. Special attention given to the rural family and the rural church; 3 hours. Credit, 3.

Associate Professor EYERLY.

8. THE STATE AND THE FARMER.—A general survey of political organizations and movements among farmers in foreign countries and their influence in shaping agrarian legislation; the character, extent and results of foreign State aid to the farming class; political movements among farmers in the United States; "Granger" legislation; relation of the Department of Agriculture, State boards of agriculture, agricultural colleges and experiment stations, postal system, railway commissions, highway commissions, public health agencies, etc., to rural welfare; 3 hours. Credit, 3.

Associate Professor EYERLY.

9. THE SOCIAL PSYCHOLOGY OF RURAL LIFE.—Characteristics of the rural mind; character of hereditary and environmental influences; nature and effects of face-to-face groups; psychological effects of isolation, rela-



tive security and freedom from strain; relation of contact with nature, of control over immediate environment, of family co-operation and of neighborhood life to self-control, self-expression, sympathy, service and leadership; nature and effects of fashion, conventionality and custom; character of discussion and public opinion, and their relation to class feeling and organization; relation of individualism, conservatism and homogeneity to crowd phenomena and progressive democracy; 3 hours. Credit, 3.

Associate Professor EYERLY.

10. FARMERS' ORGANIZATIONS.—The history, purposes and achievements of the Grange, the Farmers' Union, farmers' clubs, village improvement associations, boys' clubs, etc.; the nature, scope, methods and history of local, State and national associations formed about some farm product or special farm interest, *e.g.*, dairying, horticulture, stock breeding, forestry; their influence on "better farming, better business, better living;" their influence in forming a class consciousness and in shaping legislation; need of federation; 3 hours. Credit, 3.

Associate Professor EYERLY.

11. SOCIOLOGICAL ASPECTS OF CURRENT AGRICULTURAL QUESTIONS.—Government conservation policy, roads, railways, trolleys, telephones, postal service, credit facilities, taxation, pure food laws, tenancy and ownership, intensive versus extensive farming, agricultural labor; 3 hours. Credit, 3.

Associate Professor EYERLY.

13. SEMINAR.

Associate Professor EYERLY.

## GENERAL DEPARTMENTS.

### MILITARY SCIENCE AND TACTICS.

Captain MARTIN, Mr. PARSONS.

[The Department of Military Science and Tactics conducts its work in conjunction with the Department of Physical Education and Hygiene, in accordance with the following statement:—

All candidates for a degree in a four-years course must take for three years three full hours a week of physical training. This work must be under college supervision. At least two years of the work must be taken in the Department of Military Science and Tactics, in accordance with the requirements of the War Department; the rest is to be taken in the Department of Physical Education.

Under this arrangement, the practical (drill) courses in Military Science are given up to the Christmas recess and from the close of the spring recess to the end of the semester each year; the corresponding courses in Physical Education occupy the intervening time.

Under act of Congress (July 2, 1862), military instruction under a regular army officer is required in this college of all able-bodied male students. Men are excused from the exercises of this department only upon presentation of a certificate given by the college physician; minor disabilities which might bar enlistment are not considered. Students excused from military duty may be required to take equivalent work. The object of the instruction is to disseminate military knowledge in order that in emergency trained men may be found to command volunteer troops; but a further object is to give physical exercise, to teach obedience without detracting from self-respect, and to develop the bearing and courtesy that are as becoming in a citizen as in a soldier. Absences and other offences of military nature, and those of which the military instructor may take cognizance as affecting discipline, are dealt with by the commandant in accordance with the regulations of the department; but delinquencies in theoretical instruction not strictly military in their nature are dealt with in accordance with the rules of the faculty.

Cadets in the graduating class who have shown special aptitude for military service are reported to the Adjutant-General of the United States army and to the Adjutant-General of Massachusetts; in making appointments from civil life to the regular or volunteer army, preference is given to those who have been so reported. The names of the three most distinguished are published in the "Official Register of the United States Army." Assignments to the band are made by the military instructor. Practice in the band is credited in place of drill and theoretical instruction.

The required uniform is of khaki, costing about \$15. It is worn by all cadets when on military duty, and may be worn at other times. The uniforms are procured through an authorized tailor. Students upon entering college are required to deposit \$15 with the college treasurer to cover the cost of the uniform. The sale of old uniforms is prohibited, unless the consent of the military instructor be obtained.]

#### *Required Courses.*

1. FRESHMAN DRILL.—Practical instruction in infantry drill regulations through the school of the battalion in close and extended order; advance and rear guards; outposts; marches; ceremonies; guard duty. Upon the conduct and proficiency of this year depends the appointment of corporals for the ensuing year. Freshmen; first semester until Christmas recess; 3 hours. Credit, 1. Captain MARTIN, Mr. PARSONS.

2. FRESHMAN DRILL.—As stated under Course 1. Freshmen; second semester after spring recess; 3 hours. Credit, 1.

3. SOPHOMORE DRILL. — Practical instruction as before; pointing, aiming and sighting drills; litter drills, and first aid to the injured by detachment; target practice, in gallery and on the range. Corporals are appointed from this class. On their conduct and proficiency depends the appointment of sergeants in the next class. Sophomores; first semester until Christmas recess; 3 hours. Credit, 1. Captain MARTIN, Mr. PARSONS.

4. SOPHOMORE DRILL. — As stated under Course 3. Sophomores; second semester after spring recess; 3 hours. Credit, 1.

5. SOPHOMORE TACTICS. — Theoretical instruction in "Infantry Drill Regulations," to include the school of the company, "Manual of Guard Duty," "Small Arms Firing Regulations." Sophomores; 1 hour. Credit, 1. Captain MARTIN.

6. SOPHOMORE TACTICS. — As stated under Course 5. Sophomores; 1 hour. Credit, 1.

7. JUNIOR DRILL. — Practical instruction as before, target practice, in gallery and on the range. Sergeants are appointed from this class. On their conduct and proficiency depends their selection as officers for the ensuing year. When necessary, officers will also be appointed from this class. Juniors; first semester until Christmas recess; 3 hours. Credit, 1. Captain MARTIN, Mr. PARSONS.

8. JUNIOR DRILL. — As stated under Course 7. Juniors; second semester after spring recess; 3 hours. Credit, 1.

9. JUNIOR TACTICS. — Theoretical instruction in "Infantry Drill Regulations," to include the school of the battalion; advance and rear guards; outposts; marches and ceremonies; "Manual of Field Service Regulations;" preparation of reports; returns, muster-rolls, enlistment and discharge papers, rosters, requisitions, etc.; army regulations; lectures on military science. Juniors; 1 hour. Credit, 1. Captain MARTIN.

10. JUNIOR TACTICS. — As stated under Course 9. Juniors; 1 hour. Credit, 1.

*Elective Courses.*

11. SENIOR DRILL. — Practical instruction as before; conduct of drills of lower classes. Officers will as a rule be selected from this class. Cadets electing Courses 11 and 12 must take the election for the year, and not later than the first Monday in June of their junior year. No cadet electing this course will after the commencement drill be permitted to change his election without the consent of the dean of the faculty and of the commandant. Seniors; first semester until Christmas recess; 3 hours. Credit, 1. Captain MARTIN.

12. SENIOR DRILL. — As stated under Course 11. Seniors; second semester after spring recess; 3 hours. Credit, 1.

**PHYSICAL EDUCATION AND HYGIENE.**

Assistant Professor HICKS, Mr. FITZMAURICE.

**HYGIENE.***Required Courses.*

1. HYGIENE. — Lectures, reading, quizzes and a report on some assigned topic of personal hygiene or sanitation. Freshmen; 1 hour. Credit, 1.

Assistant Professor HICKS.

**PHYSICAL EDUCATION.**

[The Department of Physical Education conducts its work in physical training in conjunction with the Department of Military Science and Tactics, as explained in the note preceding the description of the courses in Military Science. All classified undergraduate students are given a physical examination upon entering.]

*Required Courses.*

1. ELEMENTARY GYMNASTICS. — Exercises, games and athletics; from January 1 to April 1, in connection with Course 2. Freshmen; 3 hours. Credit (given only for Course 2), 1.

Assistant Professor HICKS and Mr. FITZMAURICE.

2. ELEMENTARY GYMNASTICS. — As stated under Course 1.

3. GRADED GYMNASTICS. — Exercises, games and athletics; from January 1 to April 1, in connection with Course 4. Sophomores; 3 hours. Credit (given only for Course 4), 1.

Assistant Professor HICKS and Mr. FITZMAURICE.

4. GRADED GYMNASTICS. — As stated under Course 3.

5. GYMNASTICS. — Drills, games and athletics; from January 1 to April 1, in connection with Course 6. Juniors; 3 hours. Credit (given only for Course 6), 1.

Assistant Professor HICKS and Mr. FITZMAURICE.

6. GYMNASTICS. — As stated under Course 5.

*Elective Courses.*

7. TRAINING COURSE. — Leadership class and squad work; supervision of indoor and outdoor athletic contests and games; boxing and wrestling. Seniors; 3 hours. Credit, 1.

Assistant Professor HICKS.

8. TRAINING COURSE. — As stated under Course 7.

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THE GRADUATE SCHOOL.

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## THE GRADUATE SCHOOL.

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KENYON L. BUTTERFIELD, A.M., LL.D., President of the College.

CHARLES E. MARSHALL, Ph.D., Director of the Graduate School and Professor of Microbiology.

Graduate courses leading to the degrees of master of science and doctor of philosophy have been given for a number of years. Demands for these courses have now greatly increased, and in recognition of the benefits to be derived from a separate organization, a distinct graduate school has been established for the purpose of fitting graduates of this and other institutions for teaching in colleges, high schools and other public schools; for positions as government, State and experiment-station agriculturists, bacteriologists, botanists, chemists, entomologists, horticulturists and zoölogists; and for numerous other positions requiring a great degree of skill and scientific knowledge.

### ADMISSION.

Admission to the graduate school will be granted:—

1. To graduates of the Massachusetts Agricultural College.
2. To graduates of other institutions of good standing who have received a bachelor's degree substantially equivalent to that conferred by this college.

In case an applicant presents his diploma from an institution of good standing, but has not, as an undergraduate, taken as much of the subject he selects for his major as is required of undergraduates at the Massachusetts Agricultural College, he will be required to make up such parts of the undergraduate work in that subject as the professor in charge may consider necessary. He shall do this without credit toward his advanced degree.

Admission to the graduate school does not necessarily admit to candidacy for an advanced degree,—students holding a bachelor's degree being in some cases permitted to take graduate work without becoming candidates for higher degrees.

Applications for membership to the graduate school should be presented to the director of the school. Full statements of the applicant's previous training, of the graduate work desired, and of the amount and kind of work already done by him as an undergraduate should be submitted,—together with a statement whether the applicant desires to work for a degree.

Registration is required of all students taking graduate courses, the first registration being permitted only after the student has received an authorization card from the director.

## NATURE AND METHODS OF GRADUATE WORK.

Persons taking graduate work will find this quite different in its nature from undergraduate courses. A broad knowledge of two (or three) subjects is required, and the professors in charge of these may adopt any methods which may seem desirable to secure this to the student. Lectures, laboratory and field work in various forms are utilized; but whatever the method chosen, the aim is to train the students in methods of original investigation and experiment, inductive reasoning and the ability to carry on independent research. In addition to the lectures, a large amount of outside reading is required, the object being to give a broad knowledge of all aspects of the subjects chosen, in addition to the complete knowledge of those portions involved in or directly related to the original investigation which is to result in the thesis. Originality and ability to lead in scientific research after completing graduate work, and the establishment of a broad and thorough foundation upon which these qualities must be based, are the objects aimed at; and any methods which promise to give these results may be made use of (varying according to the nature and personal equation of each student), the supervision being largely individual rather than collective.

Candidates for the degree of master of science are required to prosecute two subjects, one of which shall be designated as the major and the other as the minor. These subjects may not be selected in the same department.

Candidates for the degree of doctor of philosophy are required to prosecute three subjects, one of which shall be designated as the major, the others as minors. No two of these subjects may be taken in the same department.

Advanced students who are not candidates for degrees may, with the approval of the faculty of the school, take more than one subject in the same department.

A statement of the subjects chosen must in each case be submitted to the director of the school for approval by the necessary committee. The chosen subjects must bear an appropriate relation to each other.

A working knowledge of French and German is essential to successful graduate work, and students not having this will find it necessary to acquire it as soon as possible after entering.

A description of the equipment of the various departments is given under "General Information."

## THESES.

A thesis is required of each candidate for an advanced degree. It must be on a topic belonging to the candidate's major subject, must show that its writer possesses the ability to carry on original research, and must be an actual contribution to knowledge.

Two copies of each thesis in its final form, ready for the printer, must be submitted to the director of the school before the candidate for the degree may take the required oral examination. One of the said copies, to contain all drawings, is to be retained as an official copy by the said director, and the other by the department in which the thesis was prepared. The candidate for the doctor's degree must be prepared to defend at the oral examination the views presented in his thesis. When printed, three copies of each



thesis must be deposited with the director of the graduate school and three copies with the department in which the work was carried out.

All theses become the property of the department in which they are prepared.

#### FINAL EXAMINATIONS.

For the degree of master of science, a final examination, which may be either written or oral, or both, is given upon the completion of each subject.

For the degree of doctor of philosophy, final examinations on the minors taken are given upon the completion of the subjects. In the major subject, a written examination, if successfully passed, is followed by an oral examination in the presence of the faculty of the school.

#### DEGREES CONFERRED.

The degree of master of science is conferred upon graduate students who have met the following requirements: —

1. The devotion of at least one year and a half to the prosecution of study in two subjects of study and research, not less than one full college year of which must be in residence.
2. The devotion of twenty hours each week to the chief or major subject, and of from twelve to sixteen hours per week to the minor subject.
3. The preparation of a thesis in the major subject, constituting an actual contribution to knowledge, and accompanied by drawings if necessary.
4. The passing of final examinations, in both major and minor subjects, to the satisfaction of the professors in charge.
5. The payment of all fees and college expenses required.

The degree of doctor of philosophy is conferred upon graduate students who have met the following requirements: —

1. The devotion of at least three years to the prosecution of three subjects of study and research in residence at the college.
2. The devotion of twenty hours each week to the chief or major subject during the entire period, and of from twelve to sixteen hours per week for a year and a half to each minor subject.
3. The preparation of a thesis, in the major subject, constituting an actual contribution to knowledge, and accompanied by drawings if necessary.
4. The passing of final examinations, in both the major and minor subjects, to the satisfaction of the professors in charge.
5. The payment of all fees and college expenses required.

The fee for the degree of master of science is \$10, and for the degree of doctor of philosophy, \$25.

#### COURSES FOR DEGREE OF MASTER OF SCIENCE.

Available either as major or minor subjects for the degree of master of science: —

Agriculture.  
Botany.  
Chemistry.  
Entomology.

Horticulture.  
Mathematics and physics.  
Veterinary science.  
Zoölogy (minor only).

## COURSES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

Available for a major subject for the degree of doctor of philosophy: —

Botany.	Entomology.
Chemistry.	Horticulture.

Available for a minor subject for the degree of doctor of philosophy: —

Agriculture.	Entomology.
Botany.	Horticulture.
Chemistry.	Zoölogy.

## GENERAL OUTLINE OF COURSES FOR THE DOCTORATE.

*Major Courses.*

BOTANY. — The following subjects in botany may be studied: —

- (a) Vegetable physiology.
- (b) Vegetable pathology.
- (c) Mycology.
- (d) Ecology.
- (e) Taxonomy.
- (f) Phylogeny.
- (g) History of Botany.
- (h) History and theory of evolution.

These subjects are pursued, to a greater or less extent, as the previous training of the student and the nature of the original problem undertaken may determine. The object of the course is to give the student a technical training in botany, to develop the spirit of research and to lay a broad foundation in the subject. (As a supplement to this course the student will do well to take, in addition to his prescribed minor work, a brief course in the history of philosophy and psychology.) Extensive reading of botanical literature, both general and specific, is required in certain subjects, and occasional lectures are given. A botanical conference is held monthly, in which various new problems of botanical science are considered by graduate students and the seniors who elect botany. A thesis dealing with some economic problem in plant physiology or pathology, or in both, and containing a distinct contribution to knowledge, is required.

CHEMISTRY. — The department is prepared to offer advanced courses in the following branches of chemistry, particularly as applied to agriculture: —

- (a) Inorganic chemistry.
- (b) Organic chemistry.
- (c) Physiological chemistry.
- (d) Physical chemistry.
- (e) Analytical chemistry.

Here follows a statement of courses which may be selected by any one properly qualified, and particularly by those who are desirous of doing work for advanced degrees: —

*Course A.* Research in industrial problems applied to agriculture.

Associate Professor PETERS.

*Course B.* Research in physico-agricultural chemistry. Prerequisite, Course 15 or its equivalent. Assistant Professor ANDERSON.

*Course C.* Advanced analytical chemistry. Research work in connection with the study of methods of analysis of fertilizers, cattle feeds, dairy products, soils, insecticides and sugars. Recent and original methods will be applied to a study of the composition of agricultural products.

Professor WELLINGTON.

*Course D.* Advanced organic chemistry. Special topics in advanced organic chemistry will be considered, both by lectures and in the laboratory. These will include such subjects as constitution and properties of carbohydrates, proteins and fats, uric acid and related compounds, and alkaloids; also such purely chemical phenomena as isomerism, tautomerism and optical rotation. The reading will include "The Monographs on Biochemistry," Cohen, Schorlemmer and Lachman. Associate Professor CHAMBERLAIN.

*Course E.* Advanced topics in physiological agricultural chemistry will be studied especially in the laboratory, including digestion, metabolism and nutrition, dietetics, feeding rations, enzymatic action and isolation of enzymes. Required reading will be followed in Abderhalden, Lusk, Hammersten, Stiles, Armsby and Euhler. Associate Professor CHAMBERLAIN.

Students for the advanced degrees of master of science and doctor of philosophy will be given a special outline of work, and will also be assigned a subject for an original thesis by the professor in charge of the work, all of which must be completed to the satisfaction of the chemical staff and particularly of the professor under whom the work is done. Students not working for a degree may take special work along agricultural chemical lines. Information may be obtained by consulting the chemical staff.

ENTOMOLOGY.—I. For the degree of doctor of philosophy as a major: Some knowledge of all the divisions of this subject is essential for the professional entomologist, though a large part of his time will be devoted only to certain portions. To insure some familiarity with all these divisions, lectures, laboratory work, field training or required reading are given in each of the following topics:—

(a) *Morphology.*—Embryology; life history and transformations; histology; phylogeny and the relation of insects to other arthropods; hermaphroditism; hybrids; parthenogenesis; pedogenesis; heterogeny; chemistry of colors of insects; luminosity; deformities of insects; variation; duration of life.

(b) *Ecology.*—Dimorphism; polymorphism; warning coloration; mimicry; insect architecture; fertilization of plants by insects; instincts of insects; insect products of value to man; geographical distribution in the different faunal regions; methods of distribution; insect migration; geological history of insects; insects as disseminators of disease; enemies of insects, vegetable and animal, including parasites.

(c) *Economic Entomology.*—General principles; insecticides; apparatus; special cases; photographs of insects and their work; methods of drawing

for illustrations; field work on insects and study of life histories; legislation concerning insects.

(d) *Systematic Entomology*.—History of entomology, including classifications and the principles of classification; laws governing nomenclature; literature, how to find and use it; indexing literature; number of insects in collections and in existence (estimated); lives of prominent entomologists; methods of collecting, preparing, preserving and shipping insects; important collections of insects.

(e) *Seminar*.—A monthly meeting of graduates, at which reports on current literature are presented and various entomological topics of importance are discussed.

(f) *Required Readings*.—The best article on the various topics named above and on the different orders of insects, to cover from fifteen thousand to twenty thousand pages of English, French and German, the candidate to be examined at the close of his course on this with his other work.

(g) *Thesis*.—A thesis, illustrated with drawings, consisting of the results of original investigation upon one or several topics, and constituting a distinct contribution to knowledge, must be completed before the final examinations are taken.

II. For the degree of doctor of philosophy as a minor, and for the degree of master of science either as a major or minor: Such portions of the course outlined above as seem most appropriate to their other subjects are given to students taking entomology as a minor.

**HORTICULTURE**.—Graduate work is offered in various lines of horticulture. For the most part this is divided into the different departments which now constitute the college Division of Horticulture, and which are as follows: Pomology, Floriculture, Landscape Gardening, Forestry and Market Gardening. For work in these lines application should be made direct to the heads of the several departments.

Besides this work, however, opportunity is offered for graduate study in General Horticulture, including topics from the several organized departments mentioned, and also questions relating to plant breeding, general evolution, propagation, manufacture of horticultural products, etc. This general work is under the direction of Prof. F. A. Waugh, head of the Division of Horticulture.

**ZOOLOGY**.—Courses in zoölogy are available as a minor for the degree of master of science, and as a minor for the degree of doctor of philosophy. The nature of the work varies according to circumstances, and may be intensive in a special field, or of a somewhat more general character, depending on the student's previous acquaintance with general zoölogical science.

The time devoted to zoölogy as a minor for either of the above-named degrees may vary from 12 to 16 hours per week, pursued for a year and a half.

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THE SHORT COURSES  
AND  
THE EXTENSION SERVICE.

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# THE SHORT COURSES AND THE EXTENSION SERVICE.

## *The Short Courses and the Extension Service.*

Through its Extension Service, the Massachusetts Agricultural College attempts to make every department of the institution a contributing factor toward developing the agriculture and country life of the Commonwealth. The work of the Extension Service divides itself quite naturally into the Short Courses given at the college and the various activities of an educational nature which are carried on all over the State.

Under the usual definition of extension activities, Short Courses are not strictly extension projects. They are rather a part of the academic work of the institution. For the sake of administrative efficiency it has seemed best to place them in charge of the director of the Extension Service in so far as organization and direction are necessary. An effort is made through these courses to bring to the college, for a few days or a few weeks, as many people as can possibly be reached in this way. In the main, the instruction in the Short Courses is given by the regular teaching force of the college, the same laboratories and equipment being used for this work as in the regular college work.

The Extension Service proper comprises various methods for the dissemination of agricultural information to the people of the Commonwealth who are interested in agriculture and country life, but who cannot come to the college for even a short time. The object of the Extension Service is to make the college as useful to the people of the Commonwealth as possible.

### A. THE SHORT COURSES.

#### ORGANIZATION AND DESCRIPTION.

The work is organized thus: —

Short Courses given at the College.

1. Winter School.
  - (a) Ten Weeks' Winter Course.
  - (b) Apple Packing School.
  - (c) Farmers' Week.
  - (d) Beekeepers' Course and Conference.
  - (e) Poultry Conference.
2. Summer School.
  - (a) The Summer School (General Course).
  - (b) Conference for Rural Community Leaders.

EXPENSES IN THE SHORT COURSES.—The expense of attending any of the Short Courses will be about as follows:—

Registration fee, . . . . .	\$5
Furnished rooms in private houses, . . . . .	\$1.50-\$3
Board at college dining hall, per week, . . . . .	\$4
Board with private families, per week, . . . . .	\$5-\$6

It is expected that a lunch counter will be operated in connection with the college dining hall. Meals may be obtained there *à la carte* at very reasonable prices.

Students in each of the dairy courses must provide themselves with two white wash suits and a white cap for use in the practical dairy work. The cost in Amherst is about \$1.25 for suit and cap.

REQUIREMENTS FOR ADMISSION TO SHORT COURSES.—No entrance examinations are required, but students are advised to review their school work in English and arithmetic. Practical experience in farm, garden, orchard or greenhouse work will be an advantage. The courses are open to both men and women.

Students must be at least eighteen years of age and must furnish satisfactory evidence of good moral character. References are required and these are investigated before applicants are accepted.

### *Winter School.*

COURSES IN THE TEN WEEKS' WINTER SCHOOL (JAN. 6 TO MARCH 14, 1913).—The following courses were given:—

1. Soil Fertility. Associate Professor HASKELL. Three periods a week for ten weeks.
2. Field Crops. Mr. E. M. McDONALD. Three periods each week for ten weeks.
3. Breeds and Breeding. Associate Professor MCLEAN and Mr. QUAIFF. Three one-hour and two two-hour periods each week for ten weeks.
4. Feeding and Management. Associate Professor MCLEAN and Mr. QUAIFF. Two periods each week for ten weeks.
5. Dairying. Associate Professor LOCKWOOD, Mr. COONS and assistants. Three one-hour, two two-hour and two three-hour periods each week for ten weeks.
6. Dairy Bacteriology. Associate Professor LOCKWOOD. Two periods each week.
7. Animal Diseases and Stable Sanitation. Professor PAIGE. Two periods each week for ten weeks.
8. Poultry. Associate Professor GRAHAM. Five one-hour and two two-hour periods each week for ten weeks.
9. Fruit Growing. Professor SEARS. Four lectures and one laboratory period each week for ten weeks.
10. Market Gardening. Assistant Professor YEAW. Two periods each week for ten weeks.
11. Landscape Gardening. Mr. HARRISON. Two periods each week for ten weeks.
12. Floriculture. Professor WHITE. Five periods each week for ten weeks.
13. Forestry. Professor CLARK. One lecture a week for ten weeks.
14. Botany. Assistant Professor OSMUN and Mr. McLAUGHLIN. Three periods each week.
15. Entomology. Professor FERNALD and assistants. Three periods each week for ten weeks.
16. New England Agriculture (required). Two periods a week for ten weeks.
17. Farm Buildings. Professor FOORD. One period a week for ten weeks.
18. Farm Accounts. Professor FOORD. Two periods each week for ten weeks.
19. Mechanics. Associate Professor LOCKWOOD and Mr. SCHROYER. Two periods each week for ten weeks.
20. Rural Sanitary Science. Assistant Professor GAGE. Two periods each week for ten weeks.
21. Beekeeping. Assistant Professor GATES. Two periods each week for ten weeks.
22. Rural Improvement. Professor WAUGH. One lecture each week for ten weeks.

APPLE PACKING SCHOOL.—The work of this school, which is conducted by the department of pomology, is of a practical nature and includes both box and barrel packing. Persons taking the course will become familiar



with the various types of packs and will receive sufficient practice to enable them to do good commercial packing.

The work in packing is supplemented by lectures on phases of commercial orcharding, such as planting, varieties, spraying, pruning, harvesting and marketing.

A fee of \$5 to help pay for fruit and other materials used is charged for this course.

**FARMERS' WEEK.** — In order to reach those who cannot come to the college for a longer time this very practical course, four days in length, is given each year. The regular college equipment is used and work of the regular faculty is supplemented by lectures and demonstrations given by eminent men.

The work is divided into four sections: (1) General agriculture, to include farm management, farm crops and so forth; (2) Dairying, animal breeding and feeding, poultry, veterinary science and bacteriology; (3) Horticulture, to include fruit growing, market gardening, floriculture and forestry; (4) Farmers' wives' section, including lectures and demonstrations in home economics, cooking and problems of homemaking.

Features of the week are the evening lectures by specialists along agricultural lines, the conference pertaining to problems of rural betterment aside from practical agricultural topics, a corn show, grain show, dairy show and so forth.

The Massachusetts Dairymen's Association and the Massachusetts Agricultural College Agricultural Improvement Association hold their annual meetings at the college during this week.

Complete programs of the 1914 Farmers' Week may be obtained in February, 1914.

**BEEKEEPERS' COURSE.** — In the last three years a complete apiary and equipment has been brought together at the college, under the direction and management of Dr. Burton N. Gates. This equipment furnishes the best of facilities for the teaching of beekeeping and allied subjects. A conference of beekeepers, with extensive exhibits of beekeepers' supplies and apparatus, is held annually at the close of each short course.

The courses offered in 1913 are: —

1. Practical Phases of Beekeeping. Associate Professor GATES.
2. Crops for Honey Bees. Dr. BROOKS.
3. Relation of Bees to the Pollination of Plants. Professor STONE.
4. Origin and Evolution of the Honey Bee. Professor FERNALD.
5. Bees and Beekeepers' Supplies. Professor PAIGE.

The features of the convention are lectures, demonstrations by authorities of national reputation, as well as exhibits of inventors, manufacturers, supply merchants and queen rearers. A special invitation is extended to all beekeepers to display and demonstrate inventions, implements or methods. If table space is desired or special equipment is to be prepared, notice should be sent to Dr. Burton N. Gates, Amherst, Mass., at least two or three weeks before the convention. The college provides covered tables for the exhibits.

**POULTRY CONFERENCE.** — In order to give a large number of poultrymen, who cannot come to the college for a longer time, practical instruction in

modern methods of breeding, feeding, poultry-house construction, operation of incubators and brooders, selecting and judging poultry for utility and for show, marketing poultry products, and so forth, a convention lasting nearly a week is held each year. The regular date has been changed from the spring of the year to the summer, and the meeting will be held July 28-30, 1913.

#### *The Summer School.*

The Summer School of Agriculture of the Massachusetts Agricultural College, which was omitted in 1912, reopens July 1, 1913, for a term of five weeks. This is the sixth session of the summer school, those of 1907 to 1911 having been highly successful. The experience of these five years will aid in making material improvements in the session of 1913.

The work of the summer school was designed originally for school teachers. The attendance has been largely of that class, and special attention will be given to the needs of teachers each year. It has been found, however, that there are many others who seek a general knowledge of theoretical and practical agriculture, and who can come to the college conveniently during the summer season. Extended courses are offered for the benefit of such persons also.

The following courses will probably be offered in 1913:—

Soils and tillage, field crops, domestic animals, dairying, poultry husbandry, fruit growing, practical gardening, trees and shrubs, forestry, landscape gardening, elementary chemistry, agricultural chemistry, plant life, cryptogamic botany, bird life, insect life, entomology, beekeeping, home economics, domestic science, home and school gardening, high school agriculture, home floriculture, agricultural economics, rural sociology, rural literature, agricultural education, organized play and recreation, arts and crafts.

From these courses it will be possible to make up programs of work suitable to the needs of almost every one, but especially of school teachers, principals, superintendents, school committeemen, farm owners, householders, suburban residents, clergymen, pastors, preachers, social workers and those who have a general interest in agriculture. Persons who are in doubt as to what courses will best suit their needs had better correspond with the Director of the Extension Service, who will gladly advise in all such matters.

Special courses covering two weeks are offered especially for clergymen, librarians and other rural leaders.

GENERAL PLAN.—From the courses offered, each student may elect courses amounting to not less than ten nor more than fifteen exercises a week, unless a larger or smaller amount of work is permitted by the director. These courses include a large amount of field work, observation trips, outdoor exercises and laboratory experiments.

Besides these, general field exercises are arranged for one afternoon each week. These are on topics of interest to all. Class excursions are arranged for every Wednesday afternoon, and more extended excursions for the whole school are conducted every Saturday. These are personally conducted by members of the faculty.

Round tables and special discussions are arranged by various instructors as their courses require.

A course of evening lectures on popular topics relating to the work of the school are a feature of the general program. Several able lecturers are engaged each year for this course. No admission is charged for these lectures.

The expenses are low. Amherst is situated in one of the most noted historical and educational centers in this country. Any one interested in problems pertaining to country life should not fail to attend. A descriptive bulletin can be had March 1, 1913.

CONFERENCE OF RURAL LEADERS.—The Annual Conference of Rural Leaders will be held July 30–August 2, as a closing feature of the summer school.

It is hoped the following organizations will co-operate as usual with the college by furnishing teachers and lecturers for their respective sections: the Federation of Churches of Massachusetts, the State Board of Education, the Free Public Library Commission, the Massachusetts Civic League, the State Board of Health, the County Work of the Young Men's Christian Association, the National Board of the Young Women's Christian Association, the New England Home Economics Association, the Russell Sage Foundation and the State Grange.

Definite class instruction will be given each morning. The afternoons will be given up entirely to special and general conferences, demonstrations of organized play, recreation and so forth. The evenings will be given over to music and lectures by the most eminent men who are making a study of rural sociology, economics and education.

The Rural Social Service exhibits will be more elaborate and extensive than in 1912.

The object of this conference is to acquaint those who are leaders in their respective communities with the work that is going on, not only in Massachusetts but in New England and other parts of the world, and to give them renewed inspiration and enthusiasm for larger and more intelligent efforts.

Teachers, clergymen, grange officers, librarians, county Y. M. C. A. workers, town officers, boards of health, officers of village improvement societies, homemakers, school officers, and all others interested in community development, are cordially invited to attend this conference. The expenses for board and room are low. There are no tuition or registration fees.

A complete program will be published in June, 1913, and can be had on application.

## B. THE EXTENSION SERVICE.

### ORGANIZATION AND DESCRIPTION.

1. Special Days for Foreigners, Agricultural Associations, etc.
2. Instruction given away from the College.
  - (1) Correspondence Courses.
  - (2) Lecture Courses and Demonstrations.
  - (3) Conferences for Community Development.
  - (4) Extension Schools of Agriculture.
  - (5) Educational Trains (Steam and Trolley).
  - (6) Educational Exhibits, with Lectures and Demonstrations at Fairs.
  - (7) Demonstration Orchards.
  - (8) Dairy Improvement Associations.
  - (9) The Massachusetts Agricultural College Agricultural Improvement Association.

- (10) Agricultural Surveys.
- (11) Advisory Work with State Institutions, Individuals, etc.
- (12) Publications, "Facts for Farmers," etc.
- (13) Student Extension Work.
- (14) Faunce Demonstration Farm.
- (15) Boys' and Girls' Clubs.
- (16) Demonstration Plots.
- (17) Traveling Libraries.
- (18) Co-operation with various organizations already in existence.
- (19) District Field Agents.
- (20) Information by Correspondence, etc.

### 1. *Special Days for Foreigners, Associations, etc.*

Days are set aside for special attention to the interests of foreigners, of agricultural organizations, etc.

AGRICULTURAL ORGANIZATIONS.—It has been especially pleasing to the college to have organizations such as the Massachusetts Poultry Association, the Massachusetts Fruit Growers' Association, Market Gardeners' and Breeders' associations, and others, meet frequently at the college. Usually a program of one or two days is provided, largely by the college faculty. These meetings serve the twofold purpose of giving the members of these organizations a chance to inspect the equipment and see the work that is being carried on by the college, and it also gives the college men a chance to find out the needs of the men engaged in the various lines of agriculture. It is hoped that other organizations besides those mentioned above will also meet at the college and that meeting will be even more frequent than in the past.

POLISH FARMERS' DAY.—In order to show the Polish farmer—who forms a large part of the population of this section of the Connecticut valley—what the college has to offer him, a Polish Farmers' Day is held each year with much success. Members of the faculty give lectures which are interpreted by Mr. K. J. Wolski of Holyoke; some of the Polish farmers who have made a success of farming also give talks. The Immigration Department of the State, the Y. M. C. A. and the Polish American Alliance co-operate with the college in this work.

### 2. *Instruction given away from the College.*

An abstract follows of the instruction that is given away from the college. The abstract divides this instruction into correspondence courses and instruction not included in the correspondence course.

CORRESPONDENCE COURSES.—The correspondence courses are offered by the college in response to calls from all sections of the State from people who desire agricultural information, but who cannot come to the college for it. The courses are designed to meet the needs of farmers, dairymen, stock breeders, fruit growers, market gardeners, floriculturists and teachers in elementary schools, high schools, academies or normal schools.

Since agricultural science and practice are changing so rapidly, it is the purpose to give a summary of the latest information on the subjects treated, yet in such language that any who pursue the study can readily understand the work. Additional courses, covering other subjects, will be added from year to year.

*Method of Conducting Correspondence Work.*—While a large number of books have been written on various agricultural subjects, very few of them are especially adapted to the correspondence course work. For this reason our courses are conducted principally by specially prepared lessons. The subject-matter partakes somewhat of the lectures that are given to the college classes. Whenever possible we recommend one or two books which ought to be purchased and read along with the course. Other books are recommended for collateral reading, which oftentimes can be obtained from the local libraries.

The courses are especially recommended to the Y. M. C. A. and to granges and other farmers' clubs for study. It is to be hoped that grange lecturers, club secretaries, and other interested persons, will organize study classes. If the size of the class, or the interest which the members take in the subject, is sufficient, we shall be pleased to send a representative of the college to the class from time to time to discuss the work and offer suggestions. A description of the correspondence courses follows:—

1. Soil and Soil Improvement. Director HURD.
2. Manures and Fertilizers. Director HURD.
3. Field Crops. Associate Professor HASKELL.
4. Farm Dairying. Associate Professor LOCKWOOD.
5. Fruit Growing. Professor SEARS and Mr. REES.
6. Market Gardening. Assistant Professor YEAW.
7. Animal Feeding. Mr. STORY.
8. Floriculture. Professor WHITE. Part I. The general culture of plants, including those grown out of doors as well as those grown under glass. Part II. Greenhouse construction and heating. Part III. Carnation culture. Part IV. Rose culture. The cost of each part, not including the text-book, is \$1.
9. Farm Accounts. Professor FOORD.
10. Entomology. Professor FERNALD.
11. Agricultural Education. Professor HART.
12. Beekeeping. Assistant Professor GATES.
13. Forestry. Professor CLARK.
14. Shade Tree Management. Professor STONE.
15. Agriculture in the Elementary Schools. Associate Professor MORTON.
16. Community Co-operation in Elementary Education. Associate Professor MORTON.
17. Poultry Husbandry. Associate Professor GRAHAM. (Will be ready February, 1913.)

*Enrollment for Correspondence Courses.*—Students may enroll in the courses any time between September 1 and June 1 of the following year. It has been found advisable not to continue the courses through the summer because the farmers as well as the other students are so busy that they cannot spend the necessary amount of time upon the lessons during the summer months. We are better equipped than we were last year to handle the great number of students who desire these courses, and we hope to be able to take care of all the students who enroll. An early enrollment is advised, however.

Enrollment must be made on the card which is furnished by the college. This will entitle the student to a suitable set of covers and other privileges.

*Expenses of the Correspondence Courses.*—In order that none may enroll but those who are interested and desire to pursue earnest study, a small fee is charged. This has been fixed at the uniform rate of \$1 for each course, except in Course 8, where it is necessary to charge \$1 for each

of the four parts, as each part is really a course in itself. This fee is payable strictly in advance when the enrollment card is sent, and the first lesson of the course will not be sent until the fee is received.

This fee is not charged to cover cost of preparing the course, for this, in time of the instructors, is many times what is received, but it is used to defray the expenses of postage and materials which are used in preparation of the lessons, and to insure a higher quality of work from those who enroll.

The cost of the text-book, when one is used, is in addition to the enrollment fee. We strongly urge all students to purchase one or two books to be used in connection with each course, because they can be kept and used for reference purposes after the course is completed. We have made arrangements with the Johnson Book Company, Amherst, Mass., to handle all of these books at reduced rates. For a catalogue of books and prices, address the Johnson Book Company. Remittances should be made by money order or check.

LECTURE AND DEMONSTRATION COURSES AWAY FROM THE COLLEGE. — The renewed and unprecedented interest in agriculture and rural life makes many more calls on the college for lectures and demonstrations than can be met. These calls come from all sorts of organizations, and the audiences are usually of good size and composed of interested people, who are eager to get the latest scientific information to use in their work. A list of lectures and their subjects can be obtained upon request.

EXTENSION SCHOOLS OF AGRICULTURE. — The extension schools held by the college during the past year were most successful, and many applications are being received for schools during 1912-13. An effort is being made so to locate these schools that they may best serve the people of the whole State. Valuable features are being added, and the work will be kept up to the highest possible standard.

EDUCATIONAL EXHIBITS, LECTURES AND DEMONSTRATIONS AT FAIRS. — During the past year lectures and demonstrations were given at sixteen fairs throughout the State. It is expected that during the next year a new college exhibit will be prepared which may be loaned to the fairs and other organizations which ask for an exhibit each year. Aside from the lectures and demonstrations which were given, successful stock judging contests were held under the direction of the college at 13 fairs.

DEMONSTRATION ORCHARDS. — During 1912, 2 new orchards have been planted and 1 orchard renovated, making a total of 10 new orchards and 4 renovated orchards now under the direction of the college. Three new orchards have been promised for the spring of 1913.

DAIRY IMPROVEMENT ASSOCIATIONS. — At the present time three associations have been organized. Others will be started as competent official testers can be found.

THE MASSACHUSETTS AGRICULTURAL COLLEGE AGRICULTURAL IMPROVEMENT ASSOCIATION. — This is an organization largely of graduates and ex-students of the college, banded together for the purpose of agricultural betterment in Massachusetts. There are at the present time about 136 members, 30 of whom are taking active part in the producing of high-class seed corn and seed potatoes, and in demonstrating the possible improvement of worn out pastures.

The usefulness of this association in the State will depend almost wholly upon the energy with which the members enter into the plans worked out by the executive committee of the association. That great things are possible for the association is shown by the work done by similar associations in other States.

**AGRICULTURAL SURVEYS.**—Through these surveys an attempt is made, by systematic study, to find out the exact conditions of farm management, including dairying, orcharding, poultry raising and other specialties, the income which is derived from these, and the facilities for marketing products. An inquiry into the social, educational, religious and moral life of rural communities is also made.

**ADVISORY WORK WITH STATE INSTITUTIONS, INDIVIDUALS, ETC.**—For the past two years special effort has been made to comply with the requests of State organizations and individuals for advice. Visits have been made when possible, but it is impossible to comply with half of the requests which come in each year.

**EXTENSION SERVICE PUBLICATIONS.**—Each year bulletins and circulars descriptive of the various short courses are published. A monthly pamphlet, "Facts for Farmers," is also issued. It is the aim of this pamphlet to give timely information on agricultural subjects in a brief and simple manner. Articles on spraying, pruning, poultry, clean milk and so forth have been issued and are in great demand. Bulletins and "Facts for Farmers" will be sent to all who apply for them.

**STUDENT EXTENSION WORK.**—As would be expected in an institution which stands for agricultural improvement in its broadest sense, the students of the Massachusetts Agricultural College are eager to have a hand in the general work of community betterment carried on by the college staff. A large number of students are employed each year in the teaching of English to foreigners in towns located near Amherst, and in carrying on helpful meetings of a general nature throughout the western part of the State. Calls for this kind of work are many, and the willingness on the part of the students is increasing from year to year. Under efficient management this work promises to be very successful in every detail.

**THE FAUNCE DEMONSTRATION FARM.**—This farm, located at Sandwich, is under the direction of a committee from the college faculty, of which the Director of the Extension Service is chairman. The farm has demonstrated beyond a doubt that small fruits, vegetables and poultry can be raised at a profit on Cape Cod. Through the work of this farm the whole community has taken on new life. The superintendent of the farm, Mr. A. W. Doolittle, has taught agriculture in the schools of the village and has given much help to the farmers of Barnstable County by his personal visits to farms.

**DEPARTMENT OF AGRICULTURAL EDUCATION.**—The extension work of this department is devoted to the promotion of agriculture and practical arts relating to country life in the public schools of the State. This is done by means of conferences with school officials and school patrons, the promotion of agricultural clubs among the school children and giving lectures before granges, farmers' clubs, and other organizations interested in this line of endeavor. The work of the agricultural clubs is under the local

management of the superintendent of schools or of some one suggested by him. Each town is expected to hold an exhibit of products. Exhibits covering rather extensive districts are incorporated with the various agricultural fairs in the State. In this way the promotion of elementary instruction in agriculture is carried on by the combined efforts of the public schools, of the patrons of the schools through their agricultural fairs, and of the Agricultural College.

The college aspect of the work is under the immediate direction of Associate Prof. O. A. Morton. His entire time is devoted to it. His services are at the disposal of the schools and school patrons in helping to promote the teaching of agriculture.

**DEMONSTRATION FIELD PLOTS.**—Aside from the work done by the Massachusetts Agricultural College Agricultural Improvement Association, little has been done toward placing demonstration plots in different sections of the State. This work is to be developed during the coming year, however.

**LIBRARY EXTENSION WORK.**—The college library has charge of this part of the Extension Service, which has to do with the circulation of agricultural literature throughout the State. This line of endeavor was instituted in 1910 by the sending out of four collections of books on agriculture and related subjects. The demand for these traveling libraries has been such that the work has grown to splendid proportions, there being now on hand a collection maintained, separate from the regular college library equipment, of nearly 600 books and pamphlets especially for this purpose. This book material is loaned out to the public libraries of the State upon request, and for such periods of time as may be regulated by supply and demand. Collections vary in size and character according to the nature of the need of the locality. From January to October, 1912, a total of 629 volumes were loaned to 37 libraries.

**CO-OPERATION WITH EXISTING ORGANIZATIONS.**—The aim of those in charge of the Extension Service has been, from the start, to co-operate with existing organizations so far as possible. During the past three years it has co-operated with the State Board of Agriculture, the State Board of Health, the State Dairy Bureau, the State Grange, the Boston Chamber of Commerce, the Springfield Board of Trade, the work of several of the various village improvement associations, the Tent Evangelistic Work in western Massachusetts, Federation of Churches of Massachusetts, State Board of Education, Free Public Library Commission, Massachusetts Civic League, State Board of Health, county work of Y. M. C. A., New England Home Economics Association, the Russell Sage Foundation, the Board of Home Missions, besides men's clubs in churches, women's clubs, schools and other agencies.

**CO-OPERATION WITH THE UNITED STATES DEPARTMENT OF AGRICULTURE.**—Through the co-operation of the United States department it has been possible to place in Massachusetts a field agent whose duty it is to visit farms and consult with the owners, aiding them in questions of farm management, and to conduct farm management investigations.

**DISTRICT FIELD AGENTS.**—It is hoped that the college will soon be able to have in each county of the State a field agent whose duty it will be to visit farmers in the county, bringing to them the best advice the experts at the college can give.



During the coming year Mr. A. W. Doolittle, superintendent of the Faunce Demonstration farm, Sandwich, will serve the college on part time as field agent for Barnstable County.

INFORMATION BY CORRESPONDENCE. — Besides these things already mentioned thousands of helpful circulars and bulletins are printed and distributed, hundreds are helped through personal visits to farms, and still larger numbers through letters of inquiry which always receive the most careful attention from every department of the institution.

Pamphlets and bulletins are sent free to all who ask for them, and correspondence from any who desire such help as has been mentioned is gladly received. Address all communications to the Director of the Extension Service, Massachusetts Agricultural College, Amherst, Mass.

STATISTICS OF THE EXTENSION SERVICE FOR 1912.

<i>Enrollment in Short Courses.</i>		People reached during 1912.
Ten Weeks' Winter Course, . . . . .	131	
Poultry Course, . . . . .	80	
Apple Packing School, . . . . .	40	
Farmers' Week, . . . . .	1,040	
Beekeepers' Course, . . . . .	10	
Polish Farmers' Day, . . . . .	57	
Conference for Rural Community Leaders, . . . . .	184	
	<hr/>	1,482
<i>Correspondence Courses.</i>		
Present enrollment, . . . . .	578	
Courses completed and work dropped during year, . . . . .	175	
	<hr/>	753
<i>Lectures.</i>		
Number given, . . . . .	591	
Approximate attendance, . . . . .	27,469	27,469
<i>Boys' and Girls' Clubs.</i>		
Number of clubs, . . . . .	127	
Number of members, . . . . .	13,462	13,462
<i>Massachusetts Agricultural College Agricultural Improvement Association.</i>		
Members enrolled, . . . . .	137	137
<i>Dairy Improvement Associations.</i>		
Members enrolled, . . . . .	55	55
<i>Extension Schools.</i>		
Total membership in five schools, . . . . .	500	500
<i>Student Extension Work.</i>		
Attendance each week at four evening schools, . . . . .	80	80
<i>Mailing List.</i>		
Facts for Farmers, . . . . .	1,553	
Short Courses, . . . . .	3,764	
	<hr/>	5,317
Total, . . . . .		<hr/> 49,366



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GENERAL INFORMATION.

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## GENERAL INFORMATION.

### A. FINANCIAL AND ADMINISTRATIVE.

#### STUDENT EXPENSES.

**TUITION.**— Tuition is free to residents of Massachusetts. Students who are not residents of Massachusetts are charged a tuition fee of \$40 a year. The tuition charged persons not citizens of the United States is \$120 a year. Students entering from Massachusetts are required to file with the president a statement signed by either town or city clerk stating that the applicant's father is a legal resident of Massachusetts.

**DORMITORIES AND BOARD.**— The college has dormitory accommodations for about 62 students. The rooms in the dormitories are occupied by the upper classmen, hence new students find it necessary to room in private houses. The rooms in the college dormitories are unfurnished; for the most part they are arranged in suits of three,—one study room and two bed rooms. These rooms are heated by steam and lighted by electricity; they are cared for by students occupying them. The dormitory rent for each person varies from \$39 to \$66 a year. The rent for furnished rooms in private houses ranges from \$1.25 to \$3 a week for each occupant. Correspondence in regard to rooms should be addressed to the dean of the college.

Board may be obtained at the college dining hall. At present the price of board there is about \$4 a week. Board is furnished at cost, the price being determined by adding 5 per cent. to the audited rate for the previous three months, and at the end of the period final settlement is made on the basis of actual cost.

#### EXPENSES.

The necessary college expenses are estimated as follows:—

Tuition: citizens of Massachusetts free; other citizens of the United States, \$40 a year; foreigners, \$120 a year.

	Low.	High.
Room in college dormitories or in private houses, . . . . .	\$39 00	\$110 00
Board in college dining hall, \$4 a week, . . . . .	144 00	144 00
Laundry, 50 cents to 85 cents a week, . . . . .	18 00	30 00
Military uniform, first year, . . . . .	13 50	13 50
Laboratory fees, . . . . .	2 00	20 00
Books, stationery and other miscellaneous, . . . . .	23 50	32 50
	\$240 00	\$350 00

**OTHER EXPENSES.**— Prospective students should understand that the above estimates cover expenses which may be called strictly college expenses, and that there are other financial obligations voluntarily placed

upon students which they should expect to meet. Chief among these are class assessments and taxes levied for maintenance of various organizations, such as the Social Union, Athletic Association, weekly publications, etc. Such expenses vary from \$15 to \$30 a year. Additional financial responsibility is also assumed by students joining a fraternity or entering into other social activities of the college. Students rooming in college dormitories are obliged to equip their own rooms with furniture. The college assumes no responsibility in regard to the safe keeping of student furniture in dormitories either during the college term or vacations, except under such special arrangement as may be made with the treasurer. Besides the amount necessary for clothes and traveling, the economical student will probably spend between \$250 and \$350 per year.

#### *Initial Charges.*

At the opening of the college year, before students are registered in their classes, the following charges are payable at the treasurer's office:—

	Freshmen.	Sophomores.	Juniors and Seniors.
Board (if at college dining hall) four weeks in advance,	\$16 00	\$16 00	\$16 00
Subscription to "Signal" (college paper), <sup>1</sup>	1 50	1 50	1 50
Assessment for support of Social Union,	1 50	1 50	1 50
Laboratory fees:—			
Chemistry,	5 00	-	-
Zoölogy,	-	2 00	-
For elective subjects,	-	-	1 00-10 00
Military uniform,	13 35	-	-
Room rent (if in college dormitory),	-	-	19 50-33 00
Student tax for support of athletics, <sup>1</sup>	8 00	8 00	8 00
	\$45 35	\$29 00	\$47 50-\$70 00

<sup>1</sup> While this is not essentially a college charge, the treasurer of the college acts as collector for the student activity, and all students are expected to make the payment as indicated. The subscription price of the "Signal" is fixed by the managers; the amount of athletic tax by vote of the student body.

#### *Laboratory Fees.*

The principles observed in establishing laboratory fees are the requirement that students pay for those materials actually used which cannot be supplied by the individual, and that the laboratory fees include a charge sufficient to guard against wanton waste and breakage.

The fees as indicated below will become effective in September, 1913.

Agronomy:—	Per Semester.
Course 2,	\$1 50
Course 4,	0 50
Course 5,	1 00
Course 6,	1 00

	Per Semester.
Animal husbandry: —	
Courses 2 and 4, each, . . . . .	\$1 00
Course 7, . . . . .	2 00
Botany: —	
Graduates, . . . . .	4 00
Courses 2 and 3, . . . . .	3 00
Course 4, . . . . .	2 00
Course 5, . . . . .	1 00
Courses 7, 9, 11, 13, . . . . .	3 00
Chemistry: —	
Courses 1, 2, 7, 8, 13, 15, . . . . .	3 00
Courses 3, 4, 5, 6, . . . . .	4 00
Courses 9, 10, 11, 12, 14, 16, . . . . .	5 00
Course 18, . . . . .	No fee.
Entomology: —	
Graduates, . . . . .	3 00
Entomology 3 and 4 each, . . . . .	3 00
Landscape gardening: —	
Landscape gardening 1, . . . . .	2 50
Landscape gardening 2, . . . . .	2 50
Landscape gardening 3, . . . . .	3 00
Landscape gardening 4, . . . . .	3 00
Landscape gardening 6, . . . . .	1 00
Landscape gardening 7, . . . . .	3 00
Landscape gardening 8, . . . . .	3 00
Drawing 1 and 2 each, . . . . .	2 50
Pomology: —	
Pomology 3 and 4 each, . . . . .	5 00
Poultry husbandry: —	
Course 3, . . . . .	1 50
Course 4, . . . . .	2 00
Zoölogy: —	
Elementary 1, . . . . .	2 00
Invertebrate 3, . . . . .	4 00
Vertebrate, . . . . .	4 00

STUDENT AID.

SELF HELP. — A number of students find opportunities for earning money without depending upon the college to furnish them with work, and many are obliged to find work of some sort to earn their way through college. A few men have met their entire expenses in this manner, many more have paid a large part of their expenses, and many have earned a small proportion of the cost of their college education; but the college recommends that no new student enter without having at least \$150 with which to pay his way until he can establish himself in some regular work. The college does not encourage students to enter without money in the expectation of earning their way entirely. The ordinary student will find it better either to work and accumulate money before coming to college, or to take more than four years in completing his college course, or, instead, to borrow money sufficient to carry him through. No student should undertake work that interferes with his studies, and students should remember that, owing to the large number of applications for employment, no one man can receive a large amount of work through the college.

So far as possible needy students will be employed in some department of the college. The divisions of agriculture and horticulture usually afford the most work, although there are several permanent janitorships available

for students, and thirty or more students are employed at the dining hall. Applications for student labor should be made directly to the president. Applicants are required to present a certificate, signed by parent or guardian and by one of the selectmen or aldermen of the town or city in which they reside, showing that the applicant needs the assistance. Students whose department or class work is not satisfactory are not likely to be continued in student labor. The most desirable and responsible positions are naturally assigned to those needy students who have been in the institution longest and who have demonstrated their need and ability. Students, therefore, may find it rather difficult to obtain all the work they desire during their freshman year; as a matter of fact, however, any student who is capable of doing a variety of things, and who is a competent workman, usually finds little difficulty in obtaining all the work that he can do from the outset.

**SPECIAL NOTICE TO NEEDEY STUDENTS.**—In the last year or two the demand for paid labor on the part of new students has far exceeded the amount of employment that the college can offer. The college cannot promise work to any student, particularly to freshmen; it accordingly urges prospective students who are dependent entirely upon their own efforts not to undertake the course before they have earned enough money to carry them through, or nearly through, the first year.

#### STUDENT ACCOUNTS.

The following rules are enforced concerning student accounts:—

No student will be allowed to graduate until all bills due the institution from him are paid.

College charges, such as room rent, laboratory fees and tuition, must be paid in advance, at the beginning of each semester. This rule is strictly adhered to, and no student will be allowed to register in his class until such payments are made.

Every student boarding at Draper Hall is required to pay at the beginning of each semester at least one month's board in advance; and no student will be allowed to continue to board at Draper Hall if at any time during the semester he is more than one week in arrears in his payment for board.

All money due for student labor shall be applied on account toward any bills that a student may owe to the institution.

#### STUDENT RELATIONS.

The customary high standard of college men in honor, manliness, self-respect and consideration for the rights of others constitutes the standards of student deportment.

Any student known to be guilty of dishonest conduct or practice must be reported by the instructor to the president for discipline.

The privileges of the college may be withdrawn from any student at any time, if such action is deemed advisable.

It should be understood that the college, acting through its president or any administrative officer designated by him, distinctly reserves the right not only to suspend or dismiss students, but also to name conditions under which students may remain in the institution. For example, if a student



is not doing creditable work he may not only be disciplined but he may also be required to meet certain prescribed conditions in respect to his studies, even though under the foregoing rules his status as a student be not affected. The same provision applies equally to the matter of absences ("cuts"). According to the rules a student is allowed a certain percentage of absences from class and other exercises. This permission, which implies a privilege and not a right, may be withdrawn at any time for any cause.

Similarly, also, it applies to participation in student activities. Though this will ordinarily be governed by the rules as already laid down, yet, if in the judgment of the college authorities a student is neglecting his work on account of these activities the privilege of participating in them may be withdrawn for such time as is considered necessary. Moreover, it may be withdrawn as a punishment for misconduct. Prospective students or their parents may, upon application, obtain a copy of the faculty rules governing student relations to the college.

## B. COLLEGE ACTIVITIES.

### GENERAL EXERCISES.

Chapel exercises are as a rule held four mornings each week. On Wednesday, instead of chapel an afternoon assembly is held, to which some prominent layman or professional man is invited to speak. The object of these assemblies is to bring to the students discussions of topics of present-day interest. A special chapel service on Sunday is usually held during the winter months. Students are required to attend these general exercises, although the president is authorized to excuse from chapel any student who may object to attendance thereon because of his religious scruples, provided his request for excuse therefrom is endorsed by his parent or guardian.

### STUDENT ACTIVITIES.

A large number of student organizations furnish opportunity to students for work and leadership.

The Massachusetts Agricultural College Social Union was established about four years ago. All students become members of the Union by paying a small fee. The Union is designed to become the center of student interests. In North College it has a trophy room and a large lounging room for music, reading and study. In the basement of this building there is also a game room for pool and billiards. In the fall and winter months the Union gives a series of entertainments, free to the students and faculty.

The College Senate is composed of representatives of the junior and senior classes. This body serves as a general director of under-graduate conduct, and represents before the faculty the interests of the student body.

The M. A. C. Christian Association is active both socially and religiously. Under its direction voluntary Bible classes are conducted during the winter months. A Catholic Club has also been organized.

The musical organizations include an orchestra, a mandolin club and a glee club. These furnish music for college meetings, and occasionally give concerts at the college and at other places. A military band is maintained as part of the cadet corps.

A Dramatic Club has been organized, and each year presents a play.

The Public Speaking Council represents the students' interest in debate and oratory.

The Athletic Association represents in the college the interests of football, baseball, track, hockey and tennis.

A Rifle Club has been organized for a few years. Teams representing this club have repeatedly won the intercollegiate championship of the country, both in indoor and outdoor contests.

The college publications are the "Signal," published weekly by the student body, and the "Index," published annually by the members of the junior class. As a part of the work in journalism, students supply The Bay State Ruralist, a special page in the "Springfield Union."

The Stockbridge Club is an organization of students especially interested in practical agriculture, horticulture and floriculture. Regular meetings are addressed by outside speakers, and members present papers and engage in discussions.

Scientific clubs also exist in the departments of French, entomology and landscape gardening.

### C. ACADEMIC AND DEPARTMENTAL.

#### DEGREES.

Those who complete a four-year course receive the degree of bachelor of science. The fee for graduation from the college is \$5.

Graduate students who complete the assigned courses will receive the degree of master of science upon the payment of a fee of \$10. Credit may sometimes be allowed towards this degree for teaching or other advanced work done in some department of the college.

Graduate students who complete the required three-years course of study, and present a satisfactory thesis, will be granted the degree of doctor of philosophy.

Those to whom degrees are awarded must present themselves in person at commencement to receive them. No honorary degrees are conferred.

The honorary fraternity of Phi Kappa Phi has a chapter at the agricultural college. Students are elected to membership to this fraternity on the basis of scholarship. Elections are made from the highest fifth of the senior class who have attained an average grade of at least 85 per cent. during their college course.

#### PRIZES.

Prizes are given annually in several departments for excellence in study or for other special achievement. Prizes offered in 1912 are:—

AGRICULTURE.—The Grinnell prizes (first, second and third), given by the Hon. William Clafin of Boston in honor of George B. Grinnell, Esq., of New York, to those members of the senior class who pass the best, second best and third best examinations, oral and written, in theoretical and practical agriculture. They are \$25, \$15 and \$10.

ANIMAL HUSBANDRY.—The F. Lothrop Ames' Prize, given by F. Lothrop Ames, Langwater Farms, North Easton, Mass., consisting of \$150 a year, offered for a period of five years, beginning 1912, to be given to the three

students standing highest in the work of advanced live-stock judging, and to be used in defraying their expenses incurred by participation in the students' judging contest at the National Dairy Show, Chicago.

**BOTANY.**—The Hills prizes (amounting to \$35), given by Henry F. Hills of Amherst, will be awarded to members of the senior class as follows: for the best herbarium, \$15; for the best collection of Massachusetts trees and shrubs, \$10; for the best collection of Massachusetts woods, \$10. No collection deemed unworthy of a prize will be considered. In 1913, a prize of \$5 is offered to that member of the sophomore class who presents the best herbarium of native flowering plants.

**GENERAL IMPROVEMENT.**—The Western Alumni Association prize (\$25) is given to that member of the sophomore class who, during the first two years in college, has shown the greatest improvement in scholarship, character and example.

**PUBLIC SPEAKING.**—The Burnham prizes are awarded as follows: to the students delivering the best and second best declarations in the Burnham contest, \$15 and \$10, respectively. The preliminary contests in declamation are open, under certain restrictions, to freshmen and sophomores.

The Flint prizes are awarded as follows: to the students delivering the best and second best orations in the Flint contest, a gold medal and \$20 and \$15, respectively. The preliminary contests in oratory are open, under certain restrictions, to all regular students.

The prizes in debate are awarded as follows: to each of the three students ranking highest in the annual debating contest, a gold medal and \$15. The preliminary contests in debate are open, under certain restrictions, to all regular students. Interclass debates, with prizes, are also held annually.

#### MILITARY DIPLOMAS.

Military diplomas are given to those men receiving the degree of bachelor of science who by their work in the department of military science have shown themselves worthy of distinction. These diplomas recommend those receiving them for commissions in the United States army or the militia of the several States.

#### EQUIPMENT.

**AGRONOMY.**—The work in agronomy is carried on by means of lectures, laboratory work and field work. The laboratories are in the north wing of South College. The seed laboratory is equipped with samples of the different grains and seeds of economic importance in field culture, and with apparatus for the study and testing of these seeds, including microscopes and the apparatus necessary for viability and purity tests. The soil laboratory is well equipped with apparatus for the study of the physical properties of soils, including an electric centrifuge; an electric resistance thermometer for determining soil and other temperatures; evaporimeters and drying ovens; and good balances. For the work in drainage there is available a surveyor's transit, a wye level, drainage levels, rods, steel tapes, surveyor's pins, and a set of drainage tools. The college farm may also be considered a part of the agronomy laboratory.

**ANIMAL HUSBANDRY.**—The most important part of the equipment for laboratory work in animal husbandry is the new judging pavilion, which

will be completed by Jan. 1, 1911. This will give new opportunities for practice work in management of live stock, together with demonstrations in judging. Another very essential part of the equipment for this department is the live stock of the college farm, which includes pure bred and grade Ayrshire, Guernsey, Holstein and Jersey cattle, French coach and Percheron horses, and Berkshire swine. A set of plaster-of-paris models of individuals of foreign and domestic breeds of horses, cattle, sheep and swine, and a collection of the different food stuffs available for the use of the New England farmer, are included in the equipment for this work.

**BOTANY.**—The department of botany occupies Clark Hall, a brick building 55 by 95 feet, two stories high, with basement and attic. It has two lecture rooms, one seating 154 and the other seating 72 people; one seminar and herbarium room; a large laboratory for sophomore and junior work, and one for senior work; and three rooms specially fitted for graduate students. The experiment station laboratories devoted to botanical research are also in this building. A small museum contains material especially useful in the teaching and illustration of plant phenomena; and on the third floor is a collection of Massachusetts timber trees, specimens showing peculiar formations of plant growth, and various specimens illustrative of scientific methods of treating trees.

The laboratories and lecture rooms are of modern construction, finely lighted and supplied with all necessary conveniences. The basement contains a bacteriological laboratory, a seed and soil room; and a convenient workshop provided with benches for wood and metal work, an electric motor, a power lathe, and other tools and appliances. In the senior laboratory is a room designed especially for physiological work; this laboratory is well supplied also with apparatus for the study of simple phenomena in plant physiology, such as respiration, metabolism, transpiration, heliotropism, etc. The herbarium contains 15,000 species of flowering plants and ferns, 1,200 sheets of mosses, 1,200 sheets of lichens and liverworts, and about 12,000 sheets of fungi. The laboratory is equipped with 90 modern compound microscopes and a number of dissecting microscopes, microtomes and a large series of charts. A conservatory 28 by 70 feet is connected with the laboratory. This is designed for experiment work and for housing material often needed in the laboratory.

**CHEMISTRY.**—The chemical department of the college now occupies the entire building previously known as the "old chapel." The basement is used for the storage of apparatus and chemicals. The first floor contains large laboratories devoted to qualitative and quantitative analysis and organic and physiological chemistry. The second floor is occupied by the general lecture room, by offices for the several members of the staff, by laboratories for physical chemistry and for beginners in quantitative analysis. The third floor has recently been fitted for work in general chemistry, and has desk room and hoods sufficient to accommodate 66 students at one time. Each place is supplied with reagents and apparatus for independent work. This floor is also occupied by a lecture room that will seat 100 students.

The entire laboratory is well equipped with the necessary apparatus and chemicals for all students who desire to perfect themselves as expert chemists, or who wish to study chemistry as a supplement to some

other line of practical or scientific work. The equipment includes a valuable and growing collection of specimens and samples of minerals, soils, raw and manufactured fertilizers, food, milk products, fibers, various other vegetable and animal products and artificial preparations of mineral and organic compounds; and also a series of preparations for illustrating the various stages of different manufactures from raw material to finished product.

**DAIRYING.** — Two large, well-drained, cement-floored rooms in the South College are used for dairy work. These are equipped with a milk heater, separators, coolers and aërotors, a pasteurizer, ripening vats, churns, butter workers, a mechanical can washer, a sterilizer, and other small apparatus necessary to a well-equipped dairy or butter factory. A third room is equipped with hand and power Babcock milk-testing machines and other apparatus used for milk and butter testing. These rooms have individual lockers for students. The new sanitary dairy and stable give an opportunity for practical laboratory work in the production and handling of certified milk.

**DINING HALL.** — Draper Hall, a brick colonial building, equipped with the modern conveniences of a dining hall, was opened in 1903. The dining service is under the supervision of the college.

**DRAWING.** — Two rooms on the second floor of Wilder Hall are occupied by the classes in drawing. They are equipped with tables and adjustable drawing stands. The necessary materials and implements are provided. The equipment includes drawing models, and plaster casts of leaves, flowers, fruits, human and architectural details, and garden ornaments, two universal drafting machines, an eidograph, centrolineads, a set of ship splines and French curves, complete water-color outfits, automatic crosshatchers and protractors.

**ENTOMOLOGY.** — **GENERAL ENTOMOLOGICAL LABORATORIES.** — The equipment for work in entomology is perhaps unexcelled in this country. In the new fireproof entomological and zoölogical building, first used in the fall of 1910, are fine lecture rooms, laboratories and museums for use in the different courses. The senior laboratory will accommodate 70 students at one time; a desk, equipped with compound microscope and accessories, together with glassware, reagents, etc., and supplied with electric light and gas is provided for each student. Dissecting microscopes, microtomes and other apparatus are available for use. The graduate laboratory is similarly equipped. It will accommodate 20 students. The large and rapidly growing collections of insects are in a room adjoining both laboratories. In the library of the building is an excellent collection of the more important books and journals treating of entomology, and many more are accessible in the college library and in the private libraries of the professors, in all making available more than 25,000 volumes, many of which cannot be found elsewhere in the United States. A card catalogue giving references to the published articles on different insects contains more than 60,000 cards, and is the largest index of its kind in the United States, and probably in the world. In the basement is a pump room where may be studied the construction of the different types of spray pump and methods of repairing them; hose, couplings, nozzles and the other parts of spraying outfits are provided, not only for examination but for use. In another

room, provided with chemical desks and apparatus, methods for the determination of the impurities and adulterations of insecticides are taught. As the insectary of the Massachusetts Agricultural Experiment Station is in the same building the facilities it offers are also available. A greenhouse, where plants infested with injurious insects are under observation and experimental treatment, is also open to students. Photographic rooms with cameras and other photographic apparatus are provided, and the large greenhouses, gardens, orchards and grounds of the college offer further opportunities for the study of injurious insects under natural conditions.

ENTOMOLOGY.—BEEKEEPING.—For this work the main office, museum and lecture rooms are in the entomological building. There is also an apiary covering approximately two acres which will consist of about fifty colonies of bees in various types of hives and maintained for the several practical and experimental purposes. The apiary also includes a collection of nectar-yielding plants representative of the native flora as well as of the more important nectar sources from other localities. Especial opportunity is therefore given for a study of this fundamental problem of forage. Upon the apiary site is an eight-room building (the first in the world erected exclusively for teaching beekeeping) modeled to meet both the requirements of teaching and of a practical apiary. This building contains a boiler room, capacious wintering cellar, wax extraction room, general carpenter and work shop, laboratory, office, honey extraction room and stock room. The beekeeping equipment also includes an unexcelled collection of apicultural implements, natural history specimens and other curiosities. Practically every device used in American apiculture is available, it being the aim of the department to procure new inventions and implements as fast as they appear for the purpose of study and comparison. Available to the students is a private library of apicultural literature consisting of upwards of 700 volumes and papers, possibly the most complete collection in the country. This entire equipment is acknowledged unique in model and in completeness for the United States and for the world.

FARM ADMINISTRATION.—The college farm of 190 acres is under the supervision of the Department of Farm Administration, and furnishes demonstration material. It includes improved land, pasture land and a farm wood lot. The improved land illustrates the value of good culture and the best known methods for the maintenance of fertility. The work in this department includes the production of the common field crops, and the care and raising of the different classes of live stock mentioned under animal husbandry. The farm is equipped with suitable buildings and good machinery for the work carried on, of which the production of certified milk is an important branch. Several good farms in the vicinity, illustrating types of both special and general agriculture, may be inspected and studied.

FLORICULTURE.—The department of floriculture aims to give the student a thorough knowledge of all phases in greenhouse design and construction and greenhouse heating, and in the culture of florists' crops. It is intended to train men for commercial floriculture and for the management of conservatories on private estates and parks and in cemeteries. The course is outlined to combine theoretical, technical and practical work in the most

comprehensive manner possible. Probably no agricultural college has a department of floriculture better equipped than this. The legislative appropriation of 1908 has made possible the erection of a durable, practical, commercial range, composed of palm, fern, orchid, violet, carnation, rose and students' houses. French Hall, with its large laboratories, class rooms and offices, furnishes excellent facilities for the purposes of instruction. Besides the new glass houses, there are older houses suitable for growing bedding plants and chrysanthemums, and frames for the growing of annual and herbaceous perennial plants, violets and pansies. Many excellent specimens of trees and shrubs are growing on the college grounds, furnishing valuable material for the study of plant materials.

**FORESTRY.**—The department of forestry has an unusually complete equipment of the various instruments used in forest mensuration, forest mapping and engineering, timber estimating, log scaling, board measuring, etc.; a large assortment of boards illustrative of the various commercial woods found in the lumber markets. The State Forest Nursery, comprising 6 acres of land and containing, approximately, 5,000,000 trees, transplants and seedlings is located on the college farm. Extensive forests containing every variety of tree common to New England are within walking distance of the college. The college campus affords an arboretum containing an exceptionally large number of trees not native to New England. The library contains complete sets of government bulletins, circulars, State reports and all the best books on forestry subjects.

**GEOLOGY.**—A large, well-lighted laboratory for geology, 27 by 50 feet, is in the basement of the new building for entomology, zoölogy and geology. This is equipped with cabinets, models, charts and a teaching collection of rocks. It has a seating capacity of 50 persons. Adjoining this is a smaller laboratory, 21 by 27 feet, for mineralogy, supplied with gas and cabinets for models, crystals and minerals. There is also a small laboratory for grinding thin sections, and a private laboratory, 6 by 19 feet, for analysis work. The geological museum is 27 by 48 feet. It has six large cases for exhibition purposes.

The equipment for geology is being enlarged. At present, in addition to the general items mentioned above, it consists of a petrographic microscope, an illustrative series of thin sections, a small collection of invertebrate fossils, some casts of vertebrate fossils, a collection of the building stones of Massachusetts, and a duplicate set of the Edward Hitchcock survey collection of the rocks and minerals of Massachusetts.

**HEATING, LIGHTING AND POWER.**—The college supplies its own light, heat and power, including electricity for the night lighting of the campus and its approaches. The machinery of the barn, the dairy and other buildings is operated by electricity generated at the power-house. The college has also a machine shop.

**LANDSCAPE GARDENING.**—The work in landscape gardening is developed in a strong technical four-year course; the first two years are occupied with required studies, including botany, horticulture, surveying and mathematics, and the last two years are devoted to more specialized studies in landscape gardening, arboriculture, floriculture, entomology, botany and mathematics. The environment is unusually favorable. The strictly technical work in landscape gardening is taught in light and comfortable drafting rooms,

fully furnished with instruments and accessories for thorough work. There is a well-selected library, and the equipment of surveying and drafting instruments is unusually complete and practical.

**LIBRARY.**—The library—stack room, reading room and office—occupies the entire lower floor of the library-chapel building. It contains nearly 34,000 volumes and a large number of pamphlets, hitherto inaccessible, but which are being put into good working order as fast as possible. Works of a scientific character predominate, but economics, literature and history are well represented and are receiving due attention. The reading room provides a variety of periodical literature, both technical and popular, encyclopedias and general reference books, and a select collection of works for general reading.

The library is now being reclassified and recatalogued, to make the splendid collection of material here gathered together readily accessible and of the greatest working value. Every effort is being made toward developing the library into a vital intellectual center of college life, of equal value to every student, teacher and teaching department. In consequence, only the most cordial relations are cherished, and the fewest and most imperative rules concerning the circulation of books and department are enforced.

Lectures are given to regular short course students to enable them to make the best use of the library. Emphasis is laid upon the proper use of the card catalogue, periodical indexes, bibliographies and guides; also, in general, assigned and class-room work, and essay and debate work.

The library hours are from 7.45 A.M. to 9 P.M. every week day, and from 9 A.M. to 2 P.M. on Sundays, in term time. Shorter hours prevail during vacations.

**MARKET GARDENING.**—The purpose of the courses in market gardening is to acquaint the student with the theories and practice of market gardening so that he will be able to carry on the business intelligently. The equipment available for practical work consists of 10 acres of good gardening land; a large collection of horse and hand garden tools; hot-beds and cold-frames; and lettuce, cucumber and tomato houses. The students therefore have opportunity both to study and to practice the important branches of the business. Classes are taught in French Hall, a new building fitted with class rooms and a laboratory particularly equipped for floriculture and market gardening. A good library of works on vegetable gardening is available.

**MATHEMATICS AND CIVIL ENGINEERING.**—*Surveying.*—The department has a considerable number of the usual surveying instruments, with the use of which the students are required to become familiar by doing field work. Among the larger instruments are 2 plain compasses, a railroad compass with telescope, a surveyor's transit, 3 engineer's transits with vertical arc and level, a Brandis solar transit, a solar compass, an omnimeter with verniers reading to 10 seconds, adapted to geodetic work, a queen plane table, 3 wye levels, 2 dumpy levels, a builder's level, a sextant, a hand level, and a large assortment of leveling rods, flag poles, chains, tapes, etc. For drafting, a vernier protractor, a pantograph, a parallel rule, etc., are available. The department also has a Fairbanks cement testing outfit.



**MILITARY SCIENCE.**—This department makes use of the campus for battalion drill, and has a special building in which there is a drill room 60 by 135 feet, an armory, an office for the commandant, a field-gun and gallery practice room and a large bathroom. The national government supplies Krag-Jorgensen rifles, with complete equipments and ammunition. The State supplies instruments for the college band. Students are held responsible for all articles of public property in their possession. The college owns an excellent target range for rifle practice, lying a short distance out of the village.

**PHYSICAL EDUCATION.**—The gymnasium and armory has a floor space of 5,000 square feet, and is 30 feet high, well lighted and ventilated. The room used for exercise and recreation is equipped with modern developing apparatus and two hand-ball courts, and is large enough for basket ball. The apparatus can quickly be removed to clear the floor. An out-door board track enables students to secure track practice through the winter. Steel lockers and bathrooms have been installed in North and South colleges, and the gymnasium has been fitted with a bathroom. The gymnasium is open from 9 A.M. to 10 P.M., and exercise may be taken at such hours as do not conflict with military drill or physical education classes. The regulation costume for class exercise consists of a white track suit and white, rubber-sole shoes.

**PHYSICS.**—Among the apparatus in use for instruction in general physics are a set of United States standard weights and measures, precision balances, a spherometer, vernier calipers, a projection lantern, etc.; in mechanics, a seconds clock systems of pulleys and levers, and apparatus to illustrate the laws of falling bodies and motion on an inclined plane, and the phenomena connected with the mechanics of liquids and gases. The department is equipped with the usual apparatus for lecture illustration in heat, light and sound; in electricity, the equipment consists of apparatus for both lecture illustration and laboratory work, including a full set of Weston ammeters and volt meters, a Carhart-Clark standard cell, a Mascart quadrant electrometer, a Siemens electro-dynamometer, and reflecting galvanometers and Wheatstone bridges for ordinary determinations of currents and resistances.

**POMOLOGY.**—The department of pomology has 10 acres of orchard, including apple, pear, peach, plum, cherry and quince trees. Of particular interest is the large collection of these fruits on the various dwarf stocks, showing many types of training. The recent revival of interest in dwarf fruits makes these dwarf orchards of especial value to students. There is also a commercial vineyard and a smaller one; in these are shown the principal types of trellis and the leading methods of training grapes. Several acres are used in growing the various kinds of small fruits, such as strawberries, raspberries, blackberries, currants and gooseberries. There are also extensive nurseries, where all of these various types of fruits are grown, in which students may see them in all stages of development.

The department has a good equipment of orchard and nursery tools of all the principal types, the use of which enables students to learn the value of each type. For other orchard operations, such as spraying and pruning, the most approved makes of pumps, nozzles, pruning saws, knives, etc., are provided. For laboratory work in systematic pomology there is a collec-

tion of more than 100 wax models of apples and plums in natural colors, which are particularly valuable in identifying varieties of these fruits unknown to the student. The laboratory is also furnished with a large number of reference books on pomology; and fruit in a fresh condition is available in great variety, not only from the college orchards but from other parts of Massachusetts and from many other States. In 1909-10, for instance, apples for class use were received from British Columbia, Ontario, Quebec, Nova Scotia, Iowa, Wisconsin, Michigan, Connecticut, New York, Oklahoma, Kansas, Colorado, Oregon, New Jersey and Vermont, besides collections of grapes from California and citrus fruit from Florida and Texas.

**POULTRY HUSBANDRY.**—The poultry plant consists of about 9 acres of land sloping gently to the west. The soil is a fine, rich, sandy loam, well drained. At present the buildings consist of an incubator cellar, 32 by 34 feet, with a capacity of 4,000 eggs, over which is a demonstration building; a pipe brood house (open-pipe system), 14 by 72 feet, which will accommodate 1,200 chickens; a long laying house, 14 by 180 feet, which accommodates 500 layers and furnishes facilities for student work in pen management; a laboratory, 14 by 80 feet, for killing, picking, dressing, crate fattening, cramming, etc.; a storage building, 28 by 42 feet, for experimental incubation, poultry carpentry, poultry mechanics and storage; an experimental breeding house, 18 by 60 feet; the 6 old experiment station buildings, each 12 by 18 feet, to be used as breeding houses, and 11 colony brooder houses. Instruction in this department is given in the form of lectures, demonstrations and practical work. The practical work consists of poultry, carpentry, caponizing, killing, picking, dressing, packing and selling poultry; pen management and fattening; running incubators and brooders, etc. At present the stock consists of 20 leading varieties of poultry. The aim of the department is to keep good specimens of all the most popular varieties of chicken, ducks and geese, so that a thorough course in poultry judging may be given, and that visitors may find the inspection of our stock an education in itself.

**PUBLIC SPEAKING.**—In connection with the work in public speaking, three regular contests are held during the year. The Burnham contest in declamation is open to freshmen and sophomores; the Flint contest in oratory and the annual debating contest are open (under restrictions) to all regular students. These contests furnish a very practical and necessary experience to all students interested in improving themselves in the art of public speaking. Prizes are given for excellence in the contests. Inter-college contests are arranged by the Public Speaking Council. One credit is given, except to freshmen, for a year of work in the College Debating Club.

**VETERINARY SCIENCE AND BACTERIOLOGY.**—The department of veterinary science and bacteriology occupies a modern laboratory and hospital stable, built in accordance with the latest principles of sanitation. Every precaution has been taken in the arrangement of details to prevent the spread of disease, and to provide for effective heating, lighting, ventilation and disinfection.

The main building contains a large working laboratory for student use, and several small private laboratories for special work. There are a lecture hall, a museum, a demonstration room, a photographing room and a work shop. The hospital stable contains a pharmacy, an operating hall, a post-

mortem and dissecting room, a poultry section, a section for cats and dogs, and 6 sections, separated from each other, for horses, cattle, sheep and swine. The laboratory equipment consists of a dissectible Auzoux model of the horse and Auzoux models of the foot and the leg, showing the anatomy and the diseases of every part. The laboratories also have modern, high-power microscopes, microtomes, incubators and sterilizers, for work in bacteriology and parasitology. There are skeletons of the horse, the cow, the sheep, the dog and the pig, and a growing collection of anatomical and pathological specimens. The lecture room is provided with numerous maps, charts and diagrams.

**ZOOLOGY.**—The college offers increased facilities for the study of zoölogy. In the new building for entomology, zoölogy and geology are spacious laboratories for both undergraduate and graduate work. On the first floor is a large sophomore laboratory, 27 by 100 feet, with a present seating capacity of 100 persons. Adjoining this is a smaller room, 20 by 27 feet, for junior and senior courses. On the second floor is a laboratory, 20 by 32 feet, for advanced work. All laboratories are equipped with gas. The equipment consists of 80 compound microscopes and accessories, 70 dissecting microscopes, microtomes and accessories, paraffine baths, incubator, dissecting instruments, glassware and other necessary apparatus.

The large amphitheater lecture hall is used jointly by the departments of entomology and zoölogy-geology. It is equipped with charts and models. The zoölogical museum is drawn upon at all times for illustrative material. The zoölogical museum is 27 by 48 feet. The main room is on the first floor of the building. Above this, on a level with the second floor, is a large gallery. On the main floor are 8 large wall cases and 5 large floor cases for exhibition purposes. The gallery has 1 one large wall case and 2 floor cases with space for 10 additional cases. The zoölogical collection consists of nearly 12,000 specimens. All the chief phyla are represented. Adjoining the museum is a preparator's room for the curator. The museum is open to the public from 1 to 5 P.M. on Saturdays, and on other week days from 3 to 6 P.M. The curator is Associate Professor Gordon.

#### PRIZES AND AWARDS, 1912.

**GRINNELL PRIZES.**—The Grinnell prizes, given by the Hon. William Claflin of Boston in honor of George B. Grinnell, Esq., of New York, to those members of the senior class who pass the best, second best and third best examinations, oral and written, in theoretical and practical agriculture, were awarded as follows:—

First prize, \$25, to Benjamin Gilbert Southwick.

Second prize, \$15, to Francis Spink Madison.

Third prize, \$10, to Eric Nichols Boland.

**BOTANICAL PRIZES.**—The Hills prizes, given by Henry F. Hills of Amherst, were awarded to members of the senior class as follows:—

A.—For the best herbarium, \$15, to Ray Ethan Torrey.

B.—For the best collection of Massachusetts trees and shrubs, \$10, to Ray Ethan Torrey.

C.—For the best collection of Massachusetts woods, \$10, to Ray Ethan Torrey.

Special sophomore prize for the best herbarium, \$5, to Ernest Elwood Stanford.

Honorary mention made of Raymond Edward Nute.

GENERAL IMPROVEMENT.—The Western Alumni Association prize, given to that member of the sophomore class who during his first two years in college has shown the greatest improvement in scholarship, character and example, was awarded as follows:—

Twenty-five dollars to Roland Alfred Payne.

PUBLIC SPEAKING.—The Burnham prizes, given to the students delivering the best and second best declarations, were awarded as follows:—

First prize, \$15, to Leroy Everett Haskins.

Second prize, \$10, to Isaac Barney Simon.

The Flint prizes, given to the students delivering the best and second best orations, were awarded as follows:—

First prize, a gold medal and \$20, to Dau Yang Lin.

Second prize, a gold medal and \$15, to Woon Young Chum.

DEBATING.—The prizes in the annual debate were awarded as follows:—

Fifteen dollars and a gold medal, to Theodore Joseph Moreau.

Fifteen dollars and a gold medal, to Benjamin Franklin Hubert.

Fifteen dollars and a gold medal, to Thomas Hemenway.

The prizes in the interclass debate were awarded as follows:—

To the team representing the Class of 1912, consisting of Theodore Joseph Moreau, Benjamin Franklin Hubert, Thomas Hemenway.

Each member of the above team was awarded a silver cup.

MILITARY HONORS.—The following-named cadet officers have been reported to the Adjutant-General of the United States army and to the Adjutant-General of the Commonwealth of Massachusetts, being efficient in military science and tactics and graduating therein with highest honors:—

Cadet Col. Marshall Cotting Pratt.

Cadet Maj. Eric Nichols Boland.

Cadet Capt. Benjamin Gilbert Southwick.

Cadet Capt. Francis Spink Madison.

Cadet Capt. Thomas Hemenway.

#### SECRETARIES OF ALUMNI ASSOCIATIONS AND CLASSES.

Alumni Secretaries' Association of the Massachusetts Agricultural College.

*Secretary:* RALPH J. WATTS, 1907, Amherst, Mass.

Association Alumni of the Massachusetts Agricultural College.

*Secretary:* SIDNEY B. HASKELL, 1904, Amherst, Mass.

Local Alumni Association of the Massachusetts Agricultural College.

*Secretary:* SIDNEY B. HASKELL, 1904, Amherst, Mass.

Alumni Club of Massachusetts.

*Clerk:* H. LINWOOD WHITE, 1909, 136 State House, Boston, Mass.

Connecticut Valley Association of the Massachusetts Agricultural College.

*Secretary:* CHARLES L. BROWN, 1894, 870 State Street, Springfield, Mass.

Massachusetts Agricultural College Club of New York.

*Secretary:* JOHN ASHBURTON CUTTER, 1882, 262 West 77th Street, New York, N. Y.

Massachusetts Agricultural College Club of Washington, D. C.

*Secretary:* CLARENCE H. GRIFFIN, 1904, 1864 Park Road, Washington, D. C.

Western Alumni Association of the Massachusetts Agricultural College.

*Secretary:* CHARLES A. TIRRELL, 1906, 4012 Perry Street, Chicago, Ill.

Massachusetts Agricultural College Pacific Coast Alumni Association.

*Secretary:* THOMAS F. HUNT, 1905, Berkeley, Cal.

*Class Secretaries.*

Class of	SECRETARY.	Secretary's Address.
1871	E. E. Thompson, . . .	5 Jacques Avenue, Worcester, Mass.
1872	F. E. Kimball, . . .	8 John Street, Worcester, Mass.
1873	C. Wellington, . . .	Amherst, Mass.
1874	D. G. Hitchcock, . . .	Warren, Mass.
1875	M. Bunker, . . .	Newton, Mass.
1876	C. Fred Deuel, . . .	Amherst, Mass.
1877	Atherton Clark, . . .	Newton, Mass.
1878	C. O. Lovell, . . .	5 Bromfield Street, Boston, Mass.
1879	R. W. Swan, . . .	41 Pleasant Street, Worcester, Mass.
1880	Alvan Fowler, . . .	413 Post Office Building, Philadelphia, Pa.
1881	J. L. Hills, . . .	59 North Prospect Street, Burlington, Vt.
1882	G. D. Howe, . . .	25 Winter Street, Bangor, Me.
1883	J. B. Lindsey, . . .	Amherst, Mass.
1884	— — —	— — —
1885	E. W. Allen, . . .	1923 Biltmore Street, Washington, D. C.
1886	Dr. Winfield Ayres, . . .	616 Madison Avenue, New York City.
1887	F. H. Fowler, . . .	Shirley, Mass.
1888	H. C. Bliss, . . .	14 Mechanic Street, Attleborough, Mass.
1889	C. S. Crocker, . . .	1003 South 25th Street, Philadelphia, Pa.
1890	David Barry, . . .	398 Walnut Street, Newtonville, Mass.
1891	H. T. Shores, . . .	177 Elm Street, Northampton, Mass.
1892	H. M. Thomson, . . .	Amherst, Mass.
1893	F. A. Smith, . . .	Turner Hill, Ipswich, Mass.
1894	S. F. Howard, . . .	Amherst, Mass.
1895	E. A. White, . . .	Amherst, Mass.
1896	A. S. Kinney, . . .	South Hadley, Mass.
1897	C. A. Peters, . . .	Amherst, Mass.
1898	— — —	— — —
1899	D. A. Beaman, . . .	Rio Piedras, Porto Rico.
1900	E. K. Atkins, . . .	15 Hubbard Avenue, Northampton, Mass.
1901	J. H. Chickering, . . .	Dover, Mass.
1902	H. L. Knight, . . .	1420 Buchanan Street, Washington, D. C.
1903	G. D. Jones, . . .	North Amherst, Mass.
1904	P. F. Staples, . . .	North Grafton, Mass.
1905	A. D. Taylor, . . .	1101 Tremont Building, Boston, Mass.
1906	Richard Wellington, . . .	Geneva, N. Y.
1907	Clinton King, . . .	6 Beacon Street, Boston, Mass.
1908	J. A. Hyslop, . . .	860 North Mulberry Street, Hagerstown, Md.
1909	O. B. Briggs, . . .	1015 Fidelity Building, Baltimore, Md.
1910	F. L. Thomas, . . .	Amherst, Mass.
1911	L. M. Johnson, . . .	Newtown, Conn.
1912	F. S. Madison, . . .	East Greenwich, R. I.



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DEGREES CONFERRED AND  
ROLL OF STUDENTS.

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# DEGREES CONFERRED — 1912.

## DOCTOR OF PHILOSOPHY.

Bartlett, Oscar Christopher, Westhampton. Massachusetts Agricultural College, B.Sc., 1909.

## MASTER OF SCIENCE.

McLaine, Leonard Septimus, New York, N. Y. Massachusetts Agricultural College, B.Sc.,  
1910.

## BACHELOR OF SCIENCE (B.Sc.).

Ackerman, Arthur John, . . . . .	Worcester.
Baker, Horace Mitchell, . . . . .	Selbyville, Del.
Beals, Carlos Loring, . . . . .	Sunderland.
Beers, Rowland Trowbridge, . . . . .	BillERICA.
Bent, William Richard, . . . . .	Marlborough.
Bodfish, Edward Hill, . . . . .	West Barnstable.
Boland, Eric Nichols, . . . . .	South Boston.
Brett, Alden Chase, . . . . .	North Abington.
Brown, Merle Raymond, . . . . .	Greenwich Village.
Burnham, Arthur James, . . . . .	Holyoke.
Burr, Frederick Huntington, . . . . .	Worthington.
Carpenter, Jesse, Jr., . . . . .	Attleborough.
Castle, Fred Arlo, . . . . .	Roseburg, Ore.
Clapp, Raymond Kingsley, . . . . .	Westhampton.
Curran, Daniel Joseph, . . . . .	Marlborough.
Deming, Winfred Griswold, . . . . .	Wethersfield, Conn.
Dodge, Albert Wesley, . . . . .	South Hamilton.
Fagerstrom, Leon Emanuel, . . . . .	Worcester.
Fisherdick, Warren Francis, . . . . .	Amherst.
Fitts, Frank Orus, . . . . .	North Amherst.
Fitzgerald, John Joseph, . . . . .	Holyoke.
Fowler, George Scott, . . . . .	Wayland.
Gallagher, James Andrew, . . . . .	North Wilmington.
Gaskill, Lewis Warren, . . . . .	Hopedale.
Gelinas, Louis Edmond, . . . . .	North Adams.
Gibbs, Robert Morey, . . . . .	Chester.
Gibson, Lester Earl, . . . . .	Melrose.
Gray, Frank Leonard, . . . . .	East Boston.
Hall, Henry Bass, . . . . .	Northampton.
Hall, Horace Whitney, . . . . .	Newton Centre.
Hallowell, Royal Norton, . . . . .	Jamaica Plain.
Hamblin, Stephen Francis, . . . . .	Marstons Mills.
Harlow, Joseph Alvin, . . . . .	Turners Falls.
Heald, Jay Morrill, . . . . .	Watertown.
Hemenway, Thomas, . . . . .	Nashua, N. H.
Hickey, Francis Benedict, . . . . .	Brockton.
Hills, Frank Burrows, . . . . .	Bernardston.
Holland, Henry Lucius, . . . . .	Amherst.
Hubert, Benjamin Franklin, . . . . .	White Plains, Ga.
Kingsbury, Arthur French, . . . . .	Medfield.
Lamson, Robert Ward, . . . . .	Amherst.
Lin, Dau Yang, . . . . .	Shanghai, China.
Lodge, Charles Albert, . . . . .	Manchester.
Madison, Francis Spink, . . . . .	East Greenwich, R. I

Martin, James Francis,	Amherst.
McGarr, Thomas Anthony,	Worcester.
Merkle, George Edward,	Amherst.
Merrill, Fred Sawyer,	Danvers.
Moreau, Theodore Joseph,	Turners Falls.
Mueller, Alfred Frederick,	Jamaica Plain.
Noyes, Harry Alfred,	Marlborough.
O'Flynn, George Bernhard,	Worcester.
Parker, Ralph Robinson,	Malden.
Pearson, Charles Cornish,	Arlington.
Peckham, Curtis,	New Bedford.
Philbrick, William Edwin,	Taunton.
Pierpont, John Edwards,	Williamsburg.
Pratt, Marshall Cotting,	Holderness, N. H.
Puffer, Stephen Perry,	North Amherst.
Raymond, Arthur Nathaniel,	Leominster.
Reed, Robert Edward,	Abington.
Robinson, Earle Johnson,	Hingham.
Rockwood, Lawrence Peck,	Waterbury, Conn.
Sanctuary, William Crocker,	Amherst.
Sellew, Lewis Raymond,	Natick.
Shaw, Ezra Ingram,	Amherst.
Southwick, Benjamin Gilbert,	Buckland.
Stack, Herbert James,	Conway.
Terry, Leon,	Springfield.
Torrey, Ray Ethan,	North Leverett.
Tower, Daniel Gordon,	Roxbury.
Tupper, George Wilbur,	Roxbury.
Turner, Howard Archibald,	Dorchester.
Wales, Robert Webster,	North Abington.
Warner, Roger Andrew,	Sunderland.
Weaver, William Jack,	Alandar.
Whitney, Charles Everett,	Wakefield.
Wilbur, Emory Sherman,	East Wareham.
Wilde, Earle Irving,	Taunton.
Williams, Edward Roger,	Concord.
Williams, Silas,	Fall River.
Wood, Howard Holmes,	Shelburne Falls.
Young, Edwin Burnham,	Dorchester.

## ROLL OF STUDENTS.

### SENIOR CLASS.

Adams, Winford Frederick, <sup>1</sup>	East. Leverett,	Theta Chi House.
Allen, Harry Willis,	West Pelham,	West Pelham.
Anderson, Oscar Gustaf,	East Pepperell,	Entomological Building.
Angier, Harris William,	Westborough,	South College Tower.
Baird, Harry Albert, <sup>1</sup>	Somerville,	4 South College.
Baker, Dean Foster,	Fairhaven,	15 North College.
Barber, George Ware, <sup>1</sup>	Hyde Park,	13 North College.
Bevan, Laurence Algur, <sup>1</sup>	Newtonville,	15 North College.
Birdsall, Webster Jennings, <sup>1</sup>	Otego, N.Y.,	Kappa Sigma House.
Borden, Ralph James,	Fall River,	7 North College.
Brewer, Charlesworth Herbert,	Mt. Vernon, N.Y.,	C. S. C. House.
Brown, Herbert Augustine,	Saxonville,	Brooks Farm.
Bullard, Alvan Henry,	South Framingham,	3 North College.
Burby, Lawrence Walter,	Chicopee Falls,	Theta Chi House.
Bursley, Harold Barrows,	Peabody,	5 North College.
Carver, John Stuart,	Roslindale,	C. S. C. House.
Clark, Norman Russell,	Millbury,	Theta Chi House.
Cobb, Joseph Boyd, <sup>1</sup>	Chicopee Falls,	5 North College.
Cole, Arlin Tower,	West Chesterfield,	2 North College.
Cole, Flora Atwood,	Newton,	Draper Hall.
Coleman, Isaac, <sup>1</sup>	Amherst,	12 North College.
Cooper, Everett Hanson, <sup>1</sup>	Greenwood,	11 North College.
Cory, Harold,	Rutherford, N. J.,	15 Beston Street.
Covill, Joseph Warren, <sup>1</sup>	Roxbury,	7 South College.
Cristman, Clyde Edward, <sup>1</sup>	Dalton,	2 North College.
Culley, Frank Hamilton,	Marshalltown, Ia.,	77 Pleasant Street.
Curtis, Harold William, <sup>1</sup>	Belchertown,	Entomology Building.
Daniel, Edward Stephen Coen,	Osterville,	7 South College.
Dayton, James Wilson,	Georgetown, Conn.,	4 North College.
Dooley, Thomas Patrick,	South Boston,	6 North College.
Drury, Lewis Floyd,	Rutland,	120 Pleasant Street.
Edminster, Albert Franklin,	Brooklyn, N. Y.,	5 South College.
Eisenhaure, John Louis, <sup>1</sup>	North Reading,	3 North College.
Ellis, Benjamin Ward,	Plymouth,	Kappa Sigma House.
Ells, Gordon Waterman,	Haverhill,	5 South College.
Fay, Robert Sedgwick,	Monson,	84 Pleasant Street.
Forbush, Wallace Clifford,	Rutland,	79 Pleasant Street.
French, James Dudley,	Hyde Park,	8 South College.
Gaskill, Ralph Hicks,	Amherst,	15 Hallock Street.
Gore, Harold Martin,	Wollaston,	11 South College.
Greenleaf, George Freeman,	Brockton,	21 Fearing Street.
Griggs, Frederick David,	Chicopee Falls,	18 South College.
Harris, Burton Adams,	Wethersfield, Conn.,	11 North College.
Hasey, Willard Harrison, <sup>1</sup>	Campello,	C. S. C. House.
Hatch, Herbert Tilden,	Atlantic,	East Experiment Station.
Headle, Herbert Wallace,	Bolton,	North College.
Headle, Marshall,	Bolton,	French Hall.
Holden, James Loomis,	Palmer,	3 North College.
Howe, Glover Elbridge,	Marlborough,	11 South College.

<sup>1</sup> Work incomplete.

Howe, Ralph Wesley, . . . . .	East Dover, Vt., . . . . .	Wilder Hall.
Huntington, Samuel Percy, . . . . .	Lynn, . . . . .	12 South College.
Hutchings, Herbert Colby, <sup>1</sup> . . . . .	South Amherst, . . . . .	9 North College.
Hyland, Harold Wilson, <sup>1</sup> . . . . .	Weymouth, . . . . .	Old Insectary.
Jones, Harold Frederic, . . . . .	Campello, . . . . .	West Experiment Station.
Jordan, Simon Miller, <sup>1</sup> . . . . .	Rutherford, N. J., . . . . .	9 South College.
Kelley, Albert Joseph, . . . . .	Roxbury, . . . . .	1 North College.
Kelley, Bernard Jenkins, . . . . .	Harwichport, . . . . .	Brooks Farm.
Kenney, Frederick Alfred, <sup>1</sup> . . . . .	Charlestown, . . . . .	South College Tower.
Lesure, John Warren Thomas, . . . . .	Fitchburg, . . . . .	Flint Laboratory.
Little, Willard Stone, <sup>1</sup> . . . . .	Newburyport, . . . . .	6 South College.
Lowry, Quincey Shaw, <sup>1</sup> . . . . .	Canton, . . . . .	6 South College.
Lundgren, Arthur Robert, <sup>1</sup> . . . . .	Orange, . . . . .	Theta Chi House.
Lyon, Harold, . . . . .	Somerville, . . . . .	13 Phillips Street.
Macone, Joseph Augustine, . . . . .	Concord, . . . . .	4 South College.
Mallett, George Alfred, . . . . .	Bridgeport, Conn., . . . . .	9 North College.
Matz, Julius, <sup>1</sup> . . . . .	Lynn, . . . . .	112 Pleasant Street.
Mayer, John Lawrence, . . . . .	South Boston, . . . . .	1 North College.
McDougall, Allister Francis, . . . . .	Westford, . . . . .	18 South College.
Moir, William Stuart, . . . . .	Boston, . . . . .	Theta Chi House.
Murray, Joseph Wilbur, . . . . .	Holyoke, . . . . .	Kappa Sigma House.
Neal, Ralph Thomas, . . . . .	Mattapan, . . . . .	Old Insectary.
Nichols, Norman Joseph, . . . . .	Everett, . . . . .	Physics Building.
O'Brien, James Leo, . . . . .	Wayland, . . . . .	10 South College.
Packard, Clyde Monroe, . . . . .	Springfield, . . . . .	84 Pleasant Street.
Pease, Lester Newton, . . . . .	Meriden, Conn., . . . . .	17 South College.
Pillsbury, Joseph James, <sup>1</sup> . . . . .	West Bridgewater, . . . . .	8 South Prospect St.
Post, George Atwell, <sup>1</sup> . . . . .	Richmond Hill, N. Y., . . . . .	Theta Chi House.
Rochrs, Herman Theodore, . . . . .	New York, N. Y., . . . . .	Kappa Sigma House.
Rosebrooks, Walter Edwin, <sup>1</sup> . . . . .	Essex, . . . . .	14 North College.
Samson, Stuart Dodds, . . . . .	Grand Isle, Vt., . . . . .	12 South College.
Selden, John Lincoln, . . . . .	Northampton, . . . . .	21 Fearing Street.
Serex, Paul, Jr., . . . . .	Jamaica Plain, . . . . .	14 North College.
Sheehan, Dennis Anthony, <sup>1</sup> . . . . .	South Lincoln, . . . . .	1 North College.
Shute, Carl August, <sup>1</sup> . . . . .	Quincy, Ill., . . . . .	14 South College.
Streeter, Charles Marsh, . . . . .	Brimfield, . . . . .	79 Pleasant Street.
Thayer, Clark Leonard, . . . . .	Smith's, . . . . .	8 North College.
Tucker, Waldo Guy, . . . . .	Lynn, . . . . .	Physics Building.
Van Zwaluwenburg, Reyer Herman, . . . . .	Rutherford, N. J., . . . . .	17 South College.
Walker, Charles Dexter, . . . . .	Greenwich Village, . . . . .	14 South College.
Whitney, Francis Wellington, <sup>1</sup> . . . . .	Wellesley, . . . . .	4 North College.
Zabriskie, George, 2d, <sup>1</sup> . . . . .	New York, N. Y., . . . . .	8 South College.

## JUNIOR CLASS.

Abbott, Leslie Elmer, . . . . .	Sandwich, . . . . .	10 North College.
Allen, Carl Murdough, . . . . .	Holyoke, . . . . .	87 Pleasant Street.
Anderson, Leslie Oscar, <sup>1</sup> . . . . .	Concord, . . . . .	101 Pleasant Street.
Baker, Warren Sears, . . . . .	Wollaston, . . . . .	8 South College.
Black, Harold Cotting, <sup>1</sup> . . . . .	Falmouth, . . . . .	Kappa Sigma House.
Blake, Ralph Cedric, <sup>1</sup> . . . . .	Wollaston, . . . . .	15 Hallock Street.
Bokelund, Chester Story, <sup>1</sup> . . . . .	Worcester, . . . . .	10 South College.
Bradley, John Watling, <sup>1</sup> . . . . .	Groton, . . . . .	88 Pleasant Street.
Bragg, Ralph Stanley, . . . . .	Milford, . . . . .	Care of Professor White.
Brewer, Harold William, <sup>1</sup> . . . . .	Mount Vernon, N.Y., . . . . .	C. S. C. House.
Brooks, Arthur Winslow, . . . . .	Enfield, . . . . .	79 Pleasant Street.
Brown, Harry Dunlap, <sup>1</sup> . . . . .	Lowell, . . . . .	Kappa Sigma House.
Calvert, Melville Bradford, . . . . .	New London, Conn., . . . . .	58 Pleasant Street.
Campbell, Malcolm David, . . . . .	Still River, . . . . .	Poultry Building.
Christie, Edward Wheeler, . . . . .	North Adams, . . . . .	P. O. Box 152.
Churchill, George Clarence, . . . . .	Worcester, . . . . .	58 Pleasant Street.
Clark, Ernest Samuel, Jr., . . . . .	Tolland, . . . . .	82 Pleasant Street.

<sup>1</sup> Work incomplete.

Clay, Harold Johnson, . . . .	North Cambridge, . . . .	21 Fearing Street.
Clegg, Frank Jackson, <sup>1</sup> . . . .	Fall River, . . . .	2 South College.
Coe, Alfred Lynn, . . . .	Fayetteville, N. Y., . . . .	79 Pleasant Street.
Cole, Herbert Elmer, <sup>1</sup> . . . .	Manchaug, . . . .	Plant House.
Coleman, David Augustus, . . . .	South Framingham, . . . .	108 Pleasant Street.
Davies, Lloyd Garrison, . . . .	Peabody, . . . .	15 South College.
Davis, Ralph Edward, <sup>1</sup> . . . .	Southbury, Conn., . . . .	77 Pleasant Street.
Davis, William Ashmun, . . . .	Northfield, . . . .	79 Pleasant Street.
Dearing, Newton Howard, <sup>1</sup> . . . .	Brookline, . . . .	7 Nutting Avenue.
Demond, Robert Norton, . . . .	North Adams, . . . .	16 South College.
Dexter, Evans King, <sup>1</sup> . . . .	Mattapoisett, . . . .	Theta Chi House.
Dunbar, Erving Walker, . . . .	Weymouth, . . . .	116 Pleasant Street.
Edgerton, Almon Morley, <sup>1</sup> . . . .	West Springfield, . . . .	13 South College.
Edwards, Edward Clinton, <sup>1</sup> . . . .	Salem, . . . .	16 South College.
Eldridge, Harold Lockwood, <sup>1</sup> . . . .	Wareham, . . . .	88 Pleasant Street.
Foster, Stuart Brooks, <sup>1</sup> . . . .	West Somerville, . . . .	Kappa Sigma House.
Freeborn, Stanley Barron, . . . .	Ware, . . . .	116 Pleasant Street.
Freedman, Samuel Leavitt, . . . .	Roxbury, . . . .	101 Pleasant Street.
Frye, Carl Raymond, . . . .	South Hadley Falls, . . . .	116 Pleasant Street.
Fuller, George, . . . .	Deerfield, . . . .	86 Pleasant Street.
Griffin, William Gerald, . . . .	South Hadley Falls, . . . .	South Hadley Falls.
Hadfield, Harold Frederick, . . . .	North Adams, . . . .	East Pleasant Street.
Handy, Ralph Ellis, <sup>1</sup> . . . .	Cataumet, . . . .	10 North College.
Harris, Rodney Wells, . . . .	Wethersfield, Conn., . . . .	77 Pleasant Street.
Hazen, Edward Leonard, <sup>1</sup> . . . .	Springfield, . . . .	Care of E. H. Forristall.
Hebard, Emory Blodgett, <sup>1</sup> . . . .	Fiskdale, . . . .	3 Fearing Street.
Heffron, Frederick, . . . .	Sherborn, . . . .	108 Pleasant Street.
Hogg, Lawrence Jagger, <sup>1</sup> . . . .	Lawrence, . . . .	Pease Avenue.
Howard, Louis Phillips, . . . .	North Easton, . . . .	19 Hallock Street.
Hutchinson, John Gouverneur, . . . .	Arlington, . . . .	15 South College.
Ingham, Earl Morris, . . . .	Granby, . . . .	86 Pleasant Street.
Jacobs, Loring Humphrey, <sup>1</sup> . . . .	Wellesley, . . . .	25 Pleasant Street.
Jenny, Herbert Hedge, <sup>1</sup> . . . .	South Boston, . . . .	6 Nutting Avenue.
Johnson, Rollin Eugene, <sup>1</sup> . . . .	Templeton, . . . .	120 Pleasant Street.
Jones, Dettmar Wentworth, <sup>1</sup> . . . .	Melrose, . . . .	66 Pleasant Street.
Leete, Richard Fowler, <sup>1</sup> . . . .	Mount Kisco, N. Y., . . . .	81 Pleasant Street.
Levine, Henry Walter, <sup>1</sup> . . . .	Roxbury, . . . .	101 Pleasant Street.
Lincoln, Murray Danforth, . . . .	North Raynham, . . . .	19 Hallock Street.
Lucas, Hoyt Dennis, . . . .	West Springfield, . . . .	1 Allen Street.
Major, Joseph, . . . .	Rutherford, N. J., . . . .	58 Pleasant Street.
Marsh, Frank Eugene, . . . .	Jefferson, . . . .	79 Pleasant Street.
Merkle, Frederick Grover, . . . .	Amherst, . . . .	North East Street.
Morrison, Harold Ivory, . . . .	Melrose, . . . .	77 Pleasant Street.
Morse, Harold John, <sup>1</sup> . . . .	Townsend, . . . .	75 Pleasant Street.
Needham, Lester Ward, <sup>1</sup> . . . .	Springfield, . . . .	Kappa Sigma House.
Nicolet, Theodore Arthur, <sup>1</sup> . . . .	Fall River, . . . .	Flint Laboratory.
Nicolet, Tell William, . . . .	Fall River, . . . .	C. S. C. House.
Nissen, Harry, . . . .	Boston, . . . .	85 Pleasant Street.
Norton, Leslie Howard, . . . .	Newport, R. I., . . . .	79 Pleasant Street.
Nute, Raymond Edson, . . . .	Fall River, . . . .	9 Fearing Street.
Oertel, John Thomas, <sup>1</sup> . . . .	South Hadley Falls, . . . .	116 Pleasant Street.
Parker, Ervine Franklin, . . . .	Poquonock, Conn., . . . .	Kappa Sigma House.
Payne, Roland Alfred, . . . .	Wakefield, . . . .	North Amherst.
Pellett, John Doubleday, . . . .	Worcester, . . . .	16 North College.
Peters, Chester Harry, . . . .	Brown's Station, N. Y., . . . .	116 Pleasant Street.
Petersen, Peveril Oscar, <sup>1</sup> . . . .	Concord, . . . .	9 Fearing Street.
Porter, Bennett Allen, . . . .	Amherst, . . . .	Hatch Barn.
Powers, Richard Henry, <sup>1</sup> . . . .	Malden, . . . .	Veterinary Laboratory.
Read, Frederick William, <sup>1</sup> . . . .	Boston, . . . .	Telephone, Amherst, 380.
Reid, George Alexander, . . . .	Worcester, . . . .	Care of E. M. Dickinson.
Russell, Alden Hesselstine, . . . .	Watertown, . . . .	116 Pleasant Street.
Sahr, Gabriel Arthur, <sup>1</sup> . . . .	Boston, . . . .	15 Phillips Street.

<sup>1</sup> Work incomplete.

Sherman, Joel Powers, . . . .	Hyannis, . . . .	9 South College.
Shirley, John Newton, . . . .	South Duxbury, . . . .	30 North Prospect Street.
Small, Francis Willard, <sup>1</sup> . . . .	North Truro, . . . .	120 Pleasant Street.
Smith, Leon Edgar, . . . .	Boston, . . . .	2 South College.
Smith, Leone Ernest, . . . .	Leominster, . . . .	116 Pleasant Street.
Stevens, Arthur Eben, . . . .	Brockton, . . . .	Beta Kappa Phi House.
Strange, Sarah Josephine, . . . .	Marshfield, . . . .	Draper Hall.
Tarbell, Munroe Gifford, <sup>1</sup> . . . .	Brimfield, . . . .	10 North College.
Taylor, Arthur Wright, . . . .	Feeding Hills, . . . .	3 Nutting Ave.
Taylor, Leland Hart, . . . .	Peabody, . . . .	13 South College.
Thurston, Arthur Searle, . . . .	Everett, . . . .	9 Fearing Street.
Tower, Alfred Leigh, . . . .	Sheffield, . . . .	120 Pleasant Street.
Upton, Ernest Franklin, . . . .	Salem, . . . .	Care of R. J. Watts.
Walker, Nathaniel Kennard, . . . .	Malden, . . . .	16 North College.
Walker, Raymond Philip, . . . .	Taunton, . . . .	83 Pleasant Street.
Warner, Raymond Winslow, . . . .	Sunderland, . . . .	77 Pleasant Street.
Webster, Louis Armstrong, . . . .	Blackstone, . . . .	82 Pleasant Street.
Weigel, Arthur George, . . . .	Lawrence, . . . .	Care of Captain Martin.
Wheeler, Chester Eaton, . . . .	Lowell, . . . .	87 Pleasant Street.
Whidden, Burton Clark, <sup>1</sup> . . . .	Townsend, . . . .	81 Pleasant Street.
Whippen, Charles Warren, . . . .	Lynn, . . . .	13 Phillips Street.
Wing, John Govan, <sup>1</sup> . . . .	Somerville, . . . .	116 Pleasant Street.
Wood, Henry Joseph, . . . .	Mendon, . . . .	82 Pleasant Street.

## SOPHOMORE CLASS.

Alden, Charles Harold, <sup>1</sup> . . . .	Amherst, . . . .	East Pleasant Street.
Allen, Francis Ellwood, . . . .	Melrose, . . . .	10 Allen Street.
Anderson, Herbert Henry, . . . .	Ware, . . . .	19 Pleasant Street.
Archibald, Herbert Hildreth, . . . .	Waltham, . . . .	Care of R. J. Watts.
Baird, Earle Fairbank, <sup>1</sup> . . . .	Waltham, . . . .	15 Beston Street.
Banister, Seth Warrener, . . . .	Westford, . . . .	14 Nutting Avenue.
Bartlett, Emory Haynes, <sup>1</sup> . . . .	Enfield, . . . .	12 Cottage Street.
Bartlett, Edward Russell, . . . .	Newburyport, . . . .	66 Pleasant Street.
Bartley, Hastings Newcomb, <sup>1</sup> . . . .	Sandwich, . . . .	66 Pleasant Street.
Bemis, Willard Gilbert, <sup>1</sup> . . . .	North Brookfield, . . . .	12 Cottage Street.
Bennett, John Ingram, . . . .	Boston, . . . .	66 Pleasant Street.
Bishop, Chester Allen, <sup>1</sup> . . . .	Peterboro, N. H., . . . .	C. S. C. House.
Boyer, Edward Everett Hale, <sup>1</sup> . . . .	Lynn, . . . .	67 East Pleasant Street.
Braley, Merton Loring, . . . .	Rock, . . . .	52 Amity Street.
Bronson, Harold Julius, . . . .	Buckland, . . . .	Brooks Farm.
Brooks, Gardner Milton, . . . .	Newton, . . . .	8 Allen Street.
Buell, Frank Weed, <sup>1</sup> . . . .	Brooklyn, N. Y., . . . .	83 Pleasant Street.
Buttrick, John Willard, . . . .	Melrose, . . . .	16 Nutting Avenue.
Cale, Gladstone Hume, <sup>1</sup> . . . .	West Springfield, . . . .	79 Pleasant Street.
Callard, John Case, <sup>1</sup> . . . .	Winthrop, . . . .	Care of President Butterfield.
Cande, Donald Hopkins, <sup>1</sup> . . . .	Pittsfield, . . . .	87 Pleasant Street.
Chase, Alexander Baxter, Jr., . . . .	West Barnstable, . . . .	Clark Hall.
Churchill, Chester Albert, <sup>1</sup> . . . .	Brockton, . . . .	18 Nutting Avenue.
Clark, Ellis Fred, . . . .	Granby, Conn., . . . .	Theta Chi House.
Clark, Saxon Dickinson, . . . .	Springfield, . . . .	19 Phillips Street.
Cleveland, Waldo Atwood, . . . .	Baldwinsville, . . . .	14 Nutting Avenue.
Clough, Maurice Joseph, . . . .	Needham, . . . .	84 Pleasant Street.
Dalrymple, Andrew Campbell, . . . .	Revere, . . . .	3 McClellan Street.
Damon, Leon Blanchard, . . . .	Melrose, . . . .	Nutting Avenue.
Day, George Allen, . . . .	Warren, . . . .	12 Cottage Street.
Dole, Sumner Alvord, . . . .	Bardwell's Ferry, . . . .	79 Pleasant Street.
Donnell, George Edwin, . . . .	Burlington, . . . .	East Experiment Station.
Doran, William Leonard, . . . .	North Dartmouth, . . . .	Plant House.
Draper, Earle Sumner, . . . .	Milford, . . . .	C. S. C. House.
Farrar, Stuart Kittridge, . . . .	Springfield, . . . .	Kappa Sigma House.
Fitzgerald, Daniel James, <sup>1</sup> . . . .	Worcester, . . . .	75 Pleasant Street.

<sup>1</sup> Work incomplete.

Flebut, Alpha John, . . . .	Amherst, . . . .	27 McClellan Street.
Frost, Robert Theodore, . . . .	New York, N. Y., . . . .	C. S. C. House.
Fuller, Richard, . . . .	Salem, . . . .	West Experiment Station.
Gare, Edward John, Jr., <sup>1</sup> . . . .	Northampton, . . . .	13 Phillips Street.
Goodwin, Malcolm Noyes, . . . .	Newburyport, . . . .	Kappa Sigma House.
Graham, Lucius Henry, <sup>1</sup> . . . .	Boston, . . . .	Pleasant Street, care of Mrs. Clutia.
Grant, Harold Davidson, . . . .	Methuen, . . . .	3 McClellan Street.
Grebin, Mark Anthony, <sup>1</sup> . . . .	North Hadley, . . . .	North Hadley.
Griggs, Raymond Bradford, <sup>1</sup> . . . .	Chicopee Falls, . . . .	84 Pleasant Street.
Hall, George Morris, . . . .	Brookline, . . . .	31 East Pleasant Street.
Hall, Roderick Chesley, . . . .	Worcester, . . . .	79 Pleasant Street.
Harper, James Edward, . . . .	New Haven, Conn., . . . .	Kappa Gamma Phi House.
Harper, Raymond Wires, . . . .	Barre, . . . .	94 Pleasant Street.
Harvey, Russell Wilton, <sup>1</sup> . . . .	Lanesville, . . . .	44 Pleasant Street.
Haskell, Willis Henry, Jr., <sup>1</sup> . . . .	Brooklyn, N. Y., . . . .	116 Pleasant Street.
Hatfield, William Hollis, . . . .	Wellesley, . . . .	87 Pleasant Street.
Hathaway, Isaac, <sup>1</sup> . . . .	Kingston, . . . .	96 Pleasant Street.
Hildreth, Paul Hughes, <sup>1</sup> . . . .	Newtonville, . . . .	8 Allen Street.
Hill, Charles Chase, <sup>1</sup> . . . .	Melrose Highlands, . . . .	Pease Avenue.
Hotis, Ralph P., . . . .	Evans Mills, N. Y., . . . .	20 Amity Street.
Hyde, George Frederic, . . . .	North Dana, . . . .	79 Pleasant Street.
Hyde, Harold Gilmore, . . . .	Winchendon, . . . .	36 North Prospect Street.
Johnson, Arthur, . . . .	Bridgeport, Conn., . . . .	12 South College.
Jordan, Perley Balch, <sup>1</sup> . . . .	Topsfield, . . . .	15 Beston Street.
Kelleher, Jerome Joseph, . . . .	Montague City, . . . .	75 Pleasant Street.
Kennedy, Thomas James, . . . .	South Hadley Falls, . . . .	35 East Pleasant Street.
Kennedy, Worthington Chester, . . . .	Hardwick, . . . .	101 Pleasant Street.
Koplovitz, Samuel, . . . .	Chelsea, . . . .	29 Lincoln Avenue.
Lane, Merton Chesleigh, . . . .	South Duxbury, . . . .	Care of L. A. Root.
LeDuc, Ashley Cudworth, <sup>1</sup> . . . .	Chesterfield, . . . .	19 Pleasant Street.
Lewis, Daniel James, . . . .	Hanson, . . . .	Kappa Sigma House.
Lewis, John Kirby, <sup>1</sup> . . . .	New Haven, Conn., . . . .	Care of E. M. Dickinson.
Lincoln, Irving Boin, <sup>1</sup> . . . .	Glens Falls, N. Y., . . . .	Care of President Butterfield.
Little, Harold Greenleaf, <sup>1</sup> . . . .	Newburyport, . . . .	Kappa Sigma House.
Lovejoy, John Sumner, . . . .	Newburyport, . . . .	53 Lincoln Avenue.
MacNeil, Ralph Langdel, . . . .	Chelsea, . . . .	21 Amity Street.
Macy, Philip Arthur, . . . .	Oak Bluffs, . . . .	53 Lincoln Avenue.
Marsh, Franklin Winter, . . . .	Amherst, . . . .	16 Nutting Avenue.
Marsh, Herbert Verner, . . . .	Deerfield, . . . .	79 Pleasant Street.
Masse, Sidney Merton, . . . .	Dorchester, . . . .	3 McClellan Street.
McKechnie, Ray Farrar, . . . .	Natick, . . . .	5 McClellan Street.
McLain, Ralph Emerson, . . . .	Melrose, . . . .	66 Pleasant Street.
Melican, George Deady, <sup>1</sup> . . . .	Worcester, . . . .	66 Pleasant Street.
Melloon, Ralph Reid, <sup>1</sup> . . . .	Lowell, . . . .	Kappa Sigma House.
Moberg, Eldon Samuel, . . . .	Campello, . . . .	18 Nutting Avenue.
Montague, Enos James, . . . .	Northampton, . . . .	13 Phillips Street.
Moore, Roger Henry, . . . .	Beverly, . . . .	66 Pleasant Street.
Navas, Miguel, <sup>1</sup> . . . .	Barranquilla, Col., S. A., . . . .	120 Pleasant Street.
O'Brien, Daniel William, <sup>1</sup> . . . .	Wayland, . . . .	New Apiary.
Parker, Edwin Kenney, <sup>1</sup> . . . .	Northampton, . . . .	77 South Pleasant Street.
Parmenter, Ernest Brigham, <sup>1</sup> . . . .	Dover, . . . .	79 Pleasant Street.
Patten, Merrill Campbell, . . . .	Brighton, . . . .	31 East Pleasant Street.
Patterson, Robert Earley, . . . .	Dorchester, . . . .	75 Pleasant Street.
Pendleton, Harlow Libby, <sup>1</sup> . . . .	Dorchester, . . . .	16 Nutting Avenue.
Perry, Gerald Eugene, . . . .	Amherst, . . . .	Prospect House.
Pike, Joseph Stevens, Jr., . . . .	Somerville, . . . .	3 Nutting Avenue.
Potter, George Raymond, <sup>1</sup> . . . .	Ludlow, . . . .	44 Pleasant Street.
Price, James Albert, . . . .	New York, N. Y., . . . .	15 Beston Street.
Rhoades, Paul Whitney, . . . .	Malden, . . . .	2 Allen Street.
Rogers, Harold Merriman, . . . .	Southington, Conn., . . . .	87 Pleasant Street.
Sauchelli, Vincent, . . . .	Waterbury, Conn., . . . .	11 High Street.

<sup>1</sup> Work incomplete.

Scott, Lincoln Bain, <sup>1</sup>	Melrose,	3 McClellan Street.
Sears, William Richard,	Arlington,	84 Pleasant Street.
Severance, Verne Lincoln,	South Hanson,	Care of L. A. Root.
Sherman, Milton Francis,	South Lincoln,	10 Allen Street.
Simon, Isaac Barney, <sup>1</sup>	Revere,	38 Cottage Street.
Slein, Owen Francis,	New Braintree,	127 South Pleasant Street.
Smith, Himan, <sup>1</sup>	Worcester,	8 Allen Street.
Spoford, Chester Porter,	Georgetown,	5 McClellan Street.
Strauss, Abraham, <sup>1</sup>	Boston,	101 Pleasant Street.
Taft, Richard Craig, <sup>1</sup>	Oxford,	84 Pleasant Street.
Tarr, Lester Winslow, <sup>1</sup>	Rockport,	44 Pleasant Street.
Tonry, Albert Joseph Paul, <sup>1</sup>	Winthrop,	Durfee Plant House.
Tower, Ralph Ernest,	Becket,	120 Pleasant Street.
Tower, William Reginald,	Sheffield,	94 Pleasant Street.
Towne, Edwin Chester, <sup>1</sup>	Waltham,	C. S. C. House.
Upton, Raymond Melville,	Peabody,	87 Pleasant Street.
Vener, Benjamin,	Brockton,	38 Cottage Street.
Vinal, Stuart Cunningham,	East Weymouth,	9 Allen Street.
Wellington, Benjamin,	Waltham,	10 Allen Street.
White, Homer Beethoven,	Melrose,	10 Allen Street.
White, Henry Harrison,	West Peabody,	79 Pleasant Street.
Whitmore, Philip Ferry,	Sunderland,	13 Phillips Street.
Whorf, Paul Francis,	Hyde Park,	87 Pleasant Street.
Wilkins, Alfred Emerson,	Wakefield,	116 Pleasant Street.
Wiley, Harold Cleland Clancy,	Orange,	Care of E. F. Gaskill.
Williams, Donald,	Catasauqua, Pa.,	C. S. C. House.
Woodman, Edward, Jr., <sup>1</sup>	Portland, Me.,	15 Gaylord Street.
Wright, Elvin Stanley,	Worcester,	15 Fearing Street.

## FRESHMAN CLASS.

Aiken, Harold,	Millis,	29 McClellan Street.
Allen, Chester King,	Quincy,	Brooks Farm.
Anderson, Frank Albert, <sup>1</sup>	Somerville,	13 Phillips Street.
Andrews, Francis Marshall, Jr.,	Manchester,	53 Lincoln Avenue.
Barnes, Fred Leslie,	Plymouth,	7 Nutting Avenue.
Bean, Harold John, <sup>1</sup>	Haverhill,	Care of E. F. Gaskill.
Beeler, Leon Charles, <sup>1</sup>	Adams,	75 Pleasant Street.
Bishop, Herbert Walker, <sup>1</sup>	Doylestown, Pa.,	C. S. C. House.
Bisbee, Philip Emerson,	Waitsfield, Vt.,	East Pleasant Street.
Blanpied, Nelson Uhler,	Framingham,	Care of Mr. Forristall.
Bradley, William George,	Groton,	31 East Pleasant Street.
Brazil, William Henry,	Leominster,	116 Pleasant Street.
Brush, David Carey,	Vineyard Haven,	19 Phillips Street.
Burnham, Chester Arthur,	Westford,	Brooks Farm.
Burt, Warner Howard,	Longmeadow,	6 Nutting Avenue.
Caldon, John Jeremiah,	West Springfield,	-
Caldwell, Harold Nute,	Lowell,	3 Nutting Avenue.
Cardarelli, Emilio Joseph,	Boston,	31 North Prospect Street.
Car Ruth, Glenn Howard,	Orange,	34 North Prospect Street.
Carver, Frank Whitney,	Plymouth,	7 Nutting Avenue.
Cate, Rex March,	Canton,	3 Nutting Avenue.
Chamberlin, Raymond,	Rutherford, N. J.,	82 Pleasant Street.
Chisholm, Raymond Lincoln,	Melrose Highlands,	66 Pleasant Street.
Chvate, Carlisle Edward,	Boston,	15 Phillips Street.
Clapp, Raymond Luckey, <sup>1</sup>	Northfield,	Brooks Farm.
Clough, Charles Henry,	Dedham,	35 East Pleasant Street.
Cobban, Donald Stickney, <sup>1</sup>	Groveland,	Mt. Pleasant.
Coleman, Albert Sumner,	Mendon,	15 Hallock Street.
Coley, William Stanton,	Wilton, Conn.,	36 North Prospect Street.
Courchene, Alcide Telesphor, <sup>1</sup>	North Adams,	14 Nash Block.
Curran, Harry Ambrose,	Marlborough,	Taylor Farm.

<sup>1</sup> Work incomplete.



Curtin, Charles Warren, . . .	Auburndale, . . .	15 Hallock Street.
Cushing, Raymond Alonzo, . . .	Somerville, . . .	13 Phillips Street.
Danforth, George Newlan, . . .	Foxcroft, Me., . . .	82 Pleasant Street.
Davis, Frank Leslie, . . .	South Hopedale, . . .	Care of E. F. Gaskill.
Dickinson, William Cows, . . .	North Amherst, . . .	North Amherst.
Dine, Hyman Bertram, . . .	Boston, . . .	35 South Pleasant Street.
Dinsmore, Donald Sanderson, . . .	Springfield, . . .	6 Nutting Avenue.
Doggett, William Henry, <sup>1</sup> . . .	Dedham, . . .	35 East Pleasant Street.
Doherty, Paul Edward, <sup>1</sup> . . .	Fall River, . . .	East Pleasant Street.
Duffill, Edward Stanley, <sup>1</sup> . . .	Greenwood, . . .	Care of L. A. Root.
Dumas, Walter Branca, <sup>1</sup> . . .	Boston, . . .	35 East Pleasant Street.
Dunbar, Henry Hart, . . .	Taunton, . . .	83 Pleasant Street.
Edwards, Maurice Millett, . . .	Lawrence, . . .	25 Pleasant Street.
Eldredge, Raymond Chase, . . .	No. Abington, . . .	30 North Prospect Street.
Eldridge, Clarence Crocker, . . .	Natick, . . .	52 Lincoln Avenue.
Epstein, Harry Browdy, . . .	Amherst, . . .	38 Cottage Street.
Fernald, Charles Henry, . . .	Amherst, . . .	44 Amity Street.
Fielding, Lester Edward, . . .	Malden, . . .	2 Allen Street.
Fisher, George Basil, . . .	Millbury, . . .	Care of E. F. Gaskill.
Fox, Edward Lawrence, <sup>1</sup> . . .	Winthrop, . . .	29 McClellan Street.
Francis, Charles Davis, . . .	Cranford, N. J., . . .	25 Pleasant Street.
Gaventa, Harry Reymmer . . .	Repaupo, N. J., . . .	35 East Pleasant Street.
Gilmore, Benjamin Anthony, . . .	Acushnet, . . .	40 Amity Street.
Gioiosa, Alfred Anthony, . . .	Dorchester, . . .	Brooks Farm.
Glover, Theodore Whitford, . . .	South Duxbury, . . .	Care of L. A. Root.
Goodwin, Clinton Foster, . . .	Haverhill, . . .	7 Nutting Avenue.
Googins, Burton, . . .	Brooklyn, . . .	52 Lincoln Avenue.
Gordon, Lewis Sanford, Jr., . . .	Clinton, . . .	Care of Dr. Gordon.
Gould, Charles Holt, <sup>1</sup> . . .	Worcester, . . .	66 Pleasant Street.
Graves, Ralph Wheeler, . . .	Shelburne Falls, . . .	40 Amity Street.
Gray, Frank Lyman, . . .	Shelburne Falls, . . .	North Amherst.
Gunn, Carlton Merrick, . . .	Sunderland, . . .	3 Nutting Avenue.
Hager, Clayton Marden, . . .	Somerville, . . .	3 Nutting Avenue.
Hall, Stanley William, . . .	Saxonville, . . .	Brooks Farm.
Harlow, Nathaniel Luzerne, <sup>1</sup> . . .	Amherst, . . .	7 Parsons Street.
Harriman, Chester Karl, . . .	Exeter, N. H., . . .	36 North Prospect Street.
Harris, William Lombard, Jr., . . .	Deerfield, . . .	53 Lincoln Avenue.
Harrocks, Thomas Lincoln, . . .	Westminster, . . .	36 North Prospect Street.
Hart, Reginald, . . .	Montague City, . . .	53 Lincoln Avenue.
Haskell, Frank Eugene, . . .	Northborough, . . .	Care of C. R. Greene.
Hathaway, Charles Edward, . . .	Somerset, . . .	19 Phillips Street.
Hemenway, Justin Stanley, . . .	Williamsburg, . . .	Brooks Farm.
Hendry, Arthur Ekman, <sup>1</sup> . . .	Mattapan, . . .	16 Nutting Avenue.
Hobart, Ralph Edmund, . . .	North Amherst, . . .	North Amherst.
Holden, Mae Faustina, . . .	Royalston, . . .	Care of President Butterfield.
Hulsizer, Allan Lynne, . . .	Flemington, N. J., . . .	29 North Prospect Street.
Hunt, Reginald Stuart, . . .	Bridgewater, . . .	53 Lincoln Avenue.
Huntington, Charles Albert, Jr., . . .	Poquonock, Conn., . . .	82 Pleasant Street.
Jenna, William Wallace, <sup>1</sup> . . .	Athol, . . .	116 Pleasant Street.
Jerome, Frederick William, <sup>1</sup> . . .	Stockbridge, . . .	40 Amity Street.
Jones, Linus Hale, . . .	Milford, . . .	Care of C. R. Greene.
Kaplan, Barney, . . .	Malden, . . .	38 Cottage Street.
Keegan, Frank Champion, <sup>1</sup> . . .	Turners Falls, . . .	75 Pleasant Street.
Keegan, Thomas Michael, <sup>1</sup> . . .	Worcester, . . .	75 Pleasant Street.
Kelly, Harold Russell, . . .	Haverhill, . . .	15 Gaylord Street.
Kennedy, George William, . . .	Sayville, L. I., . . .	7 Nutting Avenue.
Kilbon, Ralph Gillette, <sup>1</sup> . . .	Springfield, . . .	Brooks Farm.
King, Edward Lee, . . .	Dorchester, . . .	Brooks Farm.
Kinsman, Alfred Oberlin, Jr., . . .	Merrimac, . . .	-
Kitsis, Henry Hyman, <sup>1</sup> . . .	Boston, . . .	41 Pleasant Street.
Knapton, Guy Lord, . . .	Lawrence, . . .	Pease Avenue.
Laird, Kenneth Bradford, . . .	Brockton, . . .	36 North Prospect Street.

<sup>1</sup> Work incomplete.

Lamoureux, Domina Joseph,	Adams,	75 Pleasant Street.
Lehman, Walter Ernest,	Worcester,	East Pleasant Street.
Lieber, Conrad Hugo, <sup>1</sup>	Jamaica Plain,	31 North Prospect Street.
Lindquist, Albert Evert, <sup>1</sup>	Jamaica Plain,	5 McClellan Street.
Locke, Wilbur Trow,	Lawrence,	25 Pleasant Street.
Lyford, Waldo Preston,	Natick,	52 Lincoln Avenue.
MacDonald, Norman Duncan,	Melrose,	College Store.
Mahony, William John,	Winthrop,	29 McClellan Street.
Mann, Victor Leslie,	Millers Falls,	13 Phillips Street.
Marshall, Earl LeForest,	Neponset,	Hadley.
Mattoon, Harold Gleason,	Pittsfield,	87 Pleasant Street.
Maynard, Harlan Slade, <sup>1</sup>	Jefferson,	Care of R. J. Goldberg.
McCulloch, Norman Estes,	Pawtucket, R. I.,	Care of Professor Morton.
Meade, Joseph Williams, <sup>1</sup>	West Springfield,	Care of Mrs. Hill, Nutting Avenue.
Mimitz, Joseph Raymond, <sup>1</sup>	Hadley,	Hadley.
Montgomery-Peter, Thomas M.,	Philadelphia, Pa.,	15 Phillips Street.
Mooney, Raymond A., <sup>1</sup>	Plattsburgh, N. Y.,	12 Hallock Street.
Morton, Walter Joseph, <sup>1</sup>	Jamaica Plain,	Care of Mrs. Gibbs.
Moses, Charles Wicker,	Ticonderoga, N. Y.,	7 Nutting Avenue.
Moss, Earle Chester, <sup>1</sup>	Worcester,	Care of Mrs. Gibbs.
Mostrom, Harold Augustus,	Somerset,	36 North Prospect Street.
Murphy, John William,	Beverly,	15 Beston Street.
Nash, Clayton Wells,	South Weymouth,	7 Nutting Avenue.
Nestle, William John, <sup>1</sup>	Amherst,	Amherst.
Nicholson, James Thomas,	Leominster,	116 Pleasant Street.
Noyes, Samuel Verne, <sup>1</sup>	Georgetown,	36 North Prospect Street.
O'Brien, Edwin Fulton,	Somerville,	83 Pleasant Street.
Oertel, August Leonard, <sup>1</sup>	South Hadley Falls,	South Hadley Falls.
Palmer, George Bradford,	Brookline,	Care of E. F. Gaskill.
Phelps, Sanford Wallace,	Turners Falls,	35 East Pleasant Street.
Pierce, James Dwight, <sup>1</sup>	Springfield,	Care of E. H. Forristall.
Plaisted, Philip Asbury,	Arlington,	77 Pleasant Street.
Porter, Philip Clayfield,	West Springfield,	79 Pleasant Street.
Potash, Philip, <sup>1</sup>	Boston,	35 South Pleasant Street.
Potter, David,	Concord,	40 Amity Street.
Pratt, Walter Howard,	Dalton,	Hallock Street and Pease Avenue.
Prouty, Stanley Marshall,	North Brookfield,	12 Cottage Street.
Quincy, Knight,	Rosindale,	35 East Pleasant Street.
Randall, Denton William,	Somerville,	-
Ray, George Burrill,	Hingham,	Brooks Farm.
Reed, Andrew John, Jr.,	Dalton,	Pease Avenue.
Rendall, Raymond Eaton,	Melrose,	College Store.
Rich, Gilbert Warren,	Hingham,	8 Allen Street.
Richards, Everett Stackpole,	Northampton,	Northampton.
Richardson, Lewis Elmer,	Millis,	29 McClellan Street.
Ricker, Dean Albert,	Worcester,	C. S. C. House.
Rogers, Roland Winsor, <sup>1</sup>	Roxbury,	25 Lincoln Avenue.
Rogers, Tyler Stewart,	Saxonville,	Care of Mr. Forristall.
Rowe, Louis Victor, <sup>1</sup>	Melrose,	18 Nutting Avenue.
Russell, Ernest Samuel,	Hadley,	Hadley.
Ryan, William Edward, Jr., <sup>1</sup>	Stoughton,	7 Nutting Avenue.
Sanderson, Everett Shovelton,	Centreville, R. I.,	19 Phillips Street.
Saunders, William Putnam,	Lawrence,	1 Allen Street.
Sauter, William Hugo, <sup>1</sup>	Turners Falls,	75 Pleasant Street.
Scheufele, Frank Joseph,	South Natick,	52 Lincoln Avenue.
Schlotterbeck, Lewis, <sup>1</sup>	Roxbury Station, Conn.,	12 Hallock Street.
Schwartz, Louis,	Melrose,	38 Cottage Street.
Shapiro, Frank Simon,	Lynn,	41 Pleasant Street.
Sherinyan, Suran Donald,	Worcester,	Care of Mrs. Taylor, North Amherst.

<sup>1</sup> Work incomplete.

Simmons, Perez, <sup>1</sup>	Pittsfield,	36 North Prospect Street.
Smith, Horace Arthur, <sup>1</sup>	Newtown, Conn.,	Care of Mrs. Gibbs.
Smith, Philip Laurence,	Kingston,	Care of Mrs. Gibbs.
Stanford, Ernest Elwood,	Rowe,	71 South Pleasant Street.
Stearns, Frederick Campbell,	Waltham,	40 Amity Street.
Stone, Albert Edwin, <sup>1</sup>	Worcester,	Brooks Farm.
Stoughton, Richard,	Montague,	21 Fearing Street.
Swan, Durelle,	Dorchester Centre,	Care of Professor Morton.
Swift, Raymond Walter,	North Amherst,	North Amherst.
Taber, Ralph Fred,	Phoenix Mills, N. Y.,	77 Pleasant Street.
Tarbell, Herbert Hitchcock, <sup>1</sup>	Warren,	12 Cottage Street.
Taylor, Howell, <sup>1</sup>	Florida, N. Y.,	7 Nutting Avenue.
Topham, Alfred,	Lawrence,	31 East Pleasant Street.
Treat, Rutherford Sperry,	Seymour, Conn.,	7 Nutting Avenue.
Upham, Thomas Carlton,	Fitchburg,	15 Hallock Street.
Verbeck, Howard Graves, <sup>1</sup>	Malden,	Care of C. R. Greene.
Walkden, Herbert Haldon,	Westford,	Brooks Farm.
Walker, Henry Marshall,	South Harwich,	Brooks Farm.
Walker, Robert Russell,	Mansfield,	-
Warner, Lewis Pomeroy, <sup>1</sup>	Sunderland,	3 Nutting Avenue.
Webster, Frank Cedric,	Harvard,	35 East Pleasant Street.
Weisbein, Isaac,	Brooklyn, N. Y.,	Care of L. A. Root.
Wells, Harry Andrew,	Dalton, Pa.,	5 McClellan Street.
Wentworth, Everett Lawrence,	East Dover, Vt.,	30 North Prospect Street.
Wetherbee, Raymond Scott,	Waltham,	35 East Pleasant Street.
Wheeler, Chester Warren,	Southborough,	28 Northampton Road.
Wheeler, Robert Kellogg,	Great Barrington,	40 Amity Street.
Whitney, Leon Fradley,	Brooklyn, N. Y.,	52 Lincoln Avenue.
Whitney, Harold Tichenor,	Mt. Vernon, N. Y.,	C. S. C. House.
Wies, Calmy, <sup>1</sup>	Malden,	38 Cottage Street.
Wilcox, Timothy Palmer,	Andover,	83 Pleasant Street.
Wildon, Carrick Earl,	Melrose,	66 Pleasant Street.

## UNCLASSIFIED STUDENTS.

Bates, L. Emeline,	Billerica,	Draper Hall.
Blackhall, Allan John,	Brookline,	Care of Professor Morton.
Cann, Fred Hodges,	Beverly,	44 Triangle Street.
Cannon, Thomas Vincent,	Newton,	77 Pleasant Street.
Chambers, Maude Burdick,	Harper's Ferry, W. Va.,	8 Allen Street.
Comeau, Mark Walter,	Maynard,	19 Pleasant Street.
Crosby, Stanley,	Warren,	Theta Delta Chi House.
Dearth, Newman,	Ashland,	35 East Pleasant Street.
Dillon, Thomas Stevenson,	West Warren,	101 Pleasant Street.
Dodd, Dexter Tiffany,	Chestnut Hill,	83 Pleasant Street.
Dodge, Walter Eugene,	Geneva, O.,	14 South College.
Fiske, Howard Benjamin,	Passaic, N. J.,	Care of Professor White.
Fitzgerald, William Patrick,	Worcester,	75 Pleasant Street.
Fox, Everett Bailey,	Dracut,	3 Nutting Avenue.
Hicks, Albert James,	Northfield,	Brooks Farm.
Hooper, Edward Asa,	Chestnut Hill,	36 North Prospect Street.
Kendall, Edward Dana,	Holden,	Brooks Farm.
Lockwood, Dimon,	Boston,	Prospect House.
Malkasian, Nishan P.,	Boston,	-
MacCormac, Wm. Frederic,	Malden,	Brooks Farm.
Mott, Percival,	Cambridge,	81 Pleasant Street.
Nixon, William Joseph,	Boston,	101 Pleasant Street.
Pease, Willard Noah Morris,	Altoona, Pa.,	Brooks Farm.
Perry, Edgar Adams,	Attleborough,	35 East Pleasant Street.
Prouty, LeRoy Fletcher,	Rockland,	31 North Prospect Street.
Rae, George Little,	Needham Heights,	2 Allen Street.
Richards, Edwin Henry,	Hartford, Conn.,	2 Allen Street.

<sup>1</sup> Work incomplete.

Ridlon, Ernest Tarr, . . . .	Chelsea, . . . .	15 Gaylord Street.
Taylor, Frank Reed, . . . .	Frye, Me., . . . .	30 North Prospect Street.
Willard, Harold Nelson, . . . .	Baltimore, Md., . . . .	81 Pleasant Street.
Winkler, Alfred, . . . .	Hackensack, N. J., . . . .	44 Triangle Street.

## SHORT COURSES.

*Ten Weeks' Registration.*

Abbot, Mary Perkins, . . . .	. . . .	5 Marlboro Street, Boston.
Allen, Walter J., . . . .	. . . .	Box 76, Berlin.
Badger, Jos. J., . . . .	. . . .	Hudson.
Baker, Chas. L., . . . .	. . . .	8 St. James Street, Boston.
Baldwin, Chas. H., . . . .	. . . .	75 Pearl Street, Boston.
Barker, Bowen, . . . .	. . . .	85 Forest Hills Street, Jamaica Plain.
Barnard, Ernest K., . . . .	. . . .	Grasmere, N. H.,
Bartlett, Allen J., . . . .	. . . .	Lenox.
Bates, Harold, . . . .	. . . .	Oxford.
Bigelow, Jos. S., Jr., . . . .	. . . .	Cohasset.
Bittinger, Fritz John, . . . .	. . . .	Plymouth.
Blodgett, W. K., . . . .	. . . .	South Lincoln.
Borden, Aulrey W., . . . .	. . . .	South Framingham.
Boyd, Gardner, . . . .	. . . .	Dedham.
Bresth, Samuel, . . . .	. . . .	West Acton.
Brewer, Leon Arthur, . . . .	. . . .	Berlin.
Browne, W. Prichard, . . . .	. . . .	New York City.
Caldwell, Delmont, . . . .	. . . .	Dorchester.
Campbell, Ronald, . . . .	. . . .	Wayland.
Cartier, Frank J., . . . .	. . . .	Mittineague.
Chapman, Mortimer, . . . .	. . . .	Richmond.
Chase, Chas. S., . . . .	. . . .	Foxborough.
Clary, Dennis J., . . . .	. . . .	Holyoke.
Coffin, Paul S., . . . .	. . . .	Boston.
Colburn, Edw., . . . .	. . . .	New Boston, N. H.
Cole, Harold W., . . . .	. . . .	Greenbush.
Condon, E. F., . . . .	. . . .	Great Barrington.
Cooley, Elbert, . . . .	. . . .	New York.
Cooper, Herbert M., . . . .	. . . .	Interlaken.
Cotton, Harvey, . . . .	. . . .	Brighton.
Crowley, Jos., . . . .	. . . .	Cushman.
Cushman, Julian H., . . . .	. . . .	Bernardston.
Dale, Fred, . . . .	. . . .	Manchester.
Davis, H. W., . . . .	. . . .	Greenfield.
Davis, Walter H., . . . .	. . . .	Amherst.
Davison, Geo. E., . . . .	. . . .	Malden.
Deady, Nona E., . . . .	. . . .	South Boston.
Decatur, Jos. H., . . . .	. . . .	Wayland.
Easterbrook, I. H., . . . .	. . . .	Dudley.
Eastman, Harold, . . . .	. . . .	South Lyndeboro, N. H.
Farrar, A. D., . . . .	. . . .	Amherst.
Feeney, John, Jr., . . . .	. . . .	Westford.
Fiebiger, Peter, . . . .	. . . .	Weehawken, N. J.
Fisher, Walter H., . . . .	. . . .	Barre.
Fisher, E. J., . . . .	. . . .	Falmouth.
Ford, Earl Jay, . . . .	. . . .	Stockbridge.
Francis, Benj. A., . . . .	. . . .	Rock.
Freeman, Jos. O., . . . .	. . . .	Dana.
French, Mrs. Mary B., . . . .	. . . .	Acworth, N. H.
Gleason, Ray E., . . . .	. . . .	Dell.
Gopan, Sylvester, . . . .	. . . .	Tarrytown, N. Y.
Greene, Maurice N., . . . .	. . . .	Amherst.
Groff, Julia, . . . .	. . . .	Amherst.
Grosvenor, Wm. H., . . . .	. . . .	Auburn.
Gummow, Earl, . . . .	. . . .	Halifax.
Hakes, Chauncey, . . . .	. . . .	Stockbridge.

Hall, C. John, . . . . .	Milton.
Harris, Myron A., . . . . .	Farmington, Conn.
Hawks, Paul, . . . . .	Deerfield.
Hendrickson, M. Louise, . . . . .	Pittsfield.
Holbrook, Lewis, . . . . .	Brooks' Farm, Amherst.
Hoves, Leon G., . . . . .	Watson.
Ihmsen, Chas. B., . . . . .	Providence, R. I.
Imlay, Manning P., . . . . .	Zanesville, O.
Jenks, E. Lawrence, . . . . .	Adams.
Johnson, Raymond F., . . . . .	North Grafton.
Jordan, Earl W., . . . . .	West Newbury.
Jones, Chapin, . . . . .	Tufts College.
Judd, Robt. S., . . . . .	South Hadley.
Kendall, E. Dana, . . . . .	Holden.
Kentfield, John T., . . . . .	Amherst.
Lathe, Martha L., . . . . .	Newton.
Lawrence, Wm. G., . . . . .	Lincoln Street, Hudson.
Leach, C. Arthur, . . . . .	South Hamilton.
Leithauser, G. C., . . . . .	Bloomfield, N. J.
Lerner, Rose, . . . . .	Peru.
Lillie, Walter P., . . . . .	Peace Dale, R. I.
Macken, Michael, . . . . .	Glendale.
Manton, Geo., Jr., . . . . .	Eglington, Ont.
Martell, Jos. A., . . . . .	Southbridge.
McGill, Edg. J., . . . . .	Beverly.
McGregor, Frank, . . . . .	Newburyport.
Mead, Harlow E., . . . . .	North Andover.
Meloon, Ralph Reid, . . . . .	Lowell.
Messerli, R. A., . . . . .	West Andover.
Mezit, Peter, . . . . .	Damascus, Va.
Moyle, John, Jr., . . . . .	Groton.
Nash, Henry C., . . . . .	Amherst.
Newton, Lola J., . . . . .	West Brattleboro, Vt.
Newton, R. Alb., . . . . .	West Brattleboro, Vt.
North, John, . . . . .	Richmond.
O'Connor, Raymond L., . . . . .	Jamaica Plain.
Paley, Israel, . . . . .	Colchester, Conn.
Palmer, Florence E., . . . . .	Chestnut Hill.
Parker, Priscilla, . . . . .	100 Blue Hills, Hartford, Conn.
Paulson, Jos. W., . . . . .	Meadowood Farms, Cazenovia, N. Y.
Pearson, Edw., . . . . .	Fairhaven.
Pease, Clarence A., . . . . .	Meriden, Conn.
Poor, Benj. P., . . . . .	North Andover.
Prentice, Mrs. I. S., . . . . .	Springfield.
Prentice, I. S., . . . . .	Springfield.
Prescott, E. Clyde, . . . . .	Westford.
Putnam, Earl F., . . . . .	Easthampton.
Priest, Karlton K., . . . . .	Littleton.
Reed, Frank H., . . . . .	Greenwich, Conn.
Rosen, Morris, . . . . .	Brockton.
Sabine, Stephen W., . . . . .	Brookline.
Sanford, Earle, . . . . .	Springfield.
Simmons, Geo. Slate, . . . . .	Brooklyn, N. Y.
Simmons, G. W., . . . . .	Amherst.
Shaylor, F. W., . . . . .	Lee.
Smith, E. Parker, . . . . .	Holliston.
Smith, John A., . . . . .	South Westport.
Snow, Linus A., . . . . .	Windsor, Conn.
Snow, Inez J., . . . . .	Windsor, Conn.
Story, Myron, . . . . .	Chester.
Talbot, H. S., . . . . .	South Hadley.
Tate, Raymond C., . . . . .	Monterey.
Tufts, Wm., . . . . .	Boston.

Turner, Harvey.	North Reading.
Walker, Raymond,	Greenwich Village.
Wall, Geo. W.,	Chester, Pa.
Warburton, Chatterton, Jr.,	Fall River.
Webber, Harold T.,	Winchester.
Wetmore, C. Inglis,	Wollaston.
Wheeler, Caleb H.,	Concord.
Whitby, Lawrence,	Northborough.
Wilson, Wm. F.,	Orford, N. H.
Wiswall, Geo. W.,	Newton Centre.
Wiswall, Ralph A.,	Newton Centre.
Worthen, Stewart,	Mittineague.

*Apple Packing School.*

Abbot, M. P.,	Boston.
Bigelow, Jos. S., Jr.,	Cohasset.
Boyd, Gardner,	Dedham.
Brown, F. Howard,	Marlborough.
Browne, W. P.,	New York City.
Clark, Winslow,	Shoreham, Vt.
Cobb, Geo. R.,	Kingston, R. I.
Colburn, Edw. N.,	New Boston, N. H.
Cole, Harold W.,	Greenbush.
Condon, C. F.,	Great Barrington.
Critchett, E. R.,	Amherst.
Crocker, B.,	Morristown, N. J.
Davenport, S. L.,	North Grafton.
Dickson, Walter A.,	Harvard.
Easterbrook, I. H.,	Dudley.
Granger, Helen,	Griswoldville.
Green, C. R.,	Belchertown.
Kendall, E. D.,	Holden.
Leach, C. Arthur,	South Hamilton.
Lord, W. E.,	Newfield, Me.
McGill, Edg. J.,	Beverly.
Mead, H. E.,	North Andover.
Messerli, R. A.,	West Andover.
Munson, Wm. A.,	Littleton.
Paul, R. A.,	Framingham.
Paulson, J. W.,	Cazenovia, N. Y.
Prentice, I. S.,	Springfield.
Putnam, E. F.,	Easthampton.
Reynolds, L. J.,	Greenwich, Conn.
Rogers, Geo. L.,	North Wilbraham.
Sabin, Leroy C.,	Ipswich
Sabine, S. W.,	Brookline.
Shattuck, Mrs. B. B.,	West Acton, Mass.
Taylor, E. R.,	Stow, Mass.
Tufts, Wm.,	Boston.
Walker, R. C.,	Greenwich, Conn.
Wallace, Wm. N.,	Amherst.
Webber, H. T.,	Winchester.
Wheeler, C. N.,	Concord.
Whitby, L. H.,	Northborough.

*Beekeeping Course.*

Belleville, W. E.,	South Chelmsford.
Churchill, Clarence,	Lynn.
Dayton, Louise M.,	Boston.
Hartwell, Harriet,	Boston.
Howland, Florence B.,	Revere.
Lockwood, D.,	Amherst.

Robie, H. W., . . . . .	Winona, N. H.
Williams, Mrs. Ada B., . . . . .	Nahant.
Wojcik, Rev. James, . . . . .	Springfield, N. Y.
Wood, Lawrence, . . . . .	Amherst.

*Poultry Course.*

Abbott, George H., . . . . .	Brookline.
Adams, Rev. W. H., . . . . .	Southampton.
Allis, Mrs. R. D., . . . . .	Amherst.
Allis, Rufus D., . . . . .	Amherst.
Barker, Arthur C., . . . . .	Boston.
Barnes, Mrs. Ralph, . . . . .	Andover.
Bosworth, W. D., . . . . .	North Orange.
Brewer, Mrs. A. A., . . . . .	Southampton.
Brigham, Henry, . . . . .	Northampton.
Brooks, A. A., . . . . .	Holyoke.
Brown, Geo. A., . . . . .	Amherst.
Browne, L. L., . . . . .	New York, N. Y.
Burnett, W. A., . . . . .	South Hadley.
Byam, Mrs. D. H., . . . . .	Mansfield.
Challis, H. E., . . . . .	South Hadley.
Childs, Emily F., . . . . .	Manomet.
Childs, P. B., . . . . .	Manomet.
Churchill, Mrs. Wm. W., . . . . .	Milton.
Clark, H. H., . . . . .	Billerica.
Clark, Norman, . . . . .	Sunderland.
Corliss, Oscar L., . . . . .	Belchertown.
Cressey, George B., . . . . .	Salem.
Davis, Mrs. E. H., . . . . .	Amherst.
Doggett, Mary C., . . . . .	Dedham.
Doggett, T. T., . . . . .	Dedham.
Eldidge, Mrs. A., . . . . .	Amherst.
Estabrook, O. B., . . . . .	Hopedale.
Flagg, Helen L., . . . . .	West Acton.
Forristall, Mrs. E. H., . . . . .	Amherst.
Garabed, Mrs. D., . . . . .	Worcester.
Gold, M. D., . . . . .	Amherst.
Goodnow, J. S., . . . . .	Amherst.
Griswold, A. W., . . . . .	Elmwood, N. H.
Griswold, W. P., . . . . .	Holyoke.
Gunn, Chas. I., . . . . .	Sunderland.
Gunn, L. M., . . . . .	Sunderland.
Hack, Rev. Rollin T., . . . . .	Housatonic.
Harrison, Mrs. Walter H., . . . . .	Lebanon Springs, N. Y.
Harrison, Walter H., . . . . .	Lebanon Springs, N. Y.
Haven, Alta M., . . . . .	Mansfield.
Hawthorn, Peter, . . . . .	Amherst.
Herrick, Ralph C., . . . . .	Hollis, N. H.
Hitchcock, Mary M., . . . . .	Ware.
Hodder, Mrs. A. R., . . . . .	Hadley.
Hooper, Mrs. W. H., . . . . .	East Milton.
Hyde, Elizabeth, . . . . .	Ware.
Jacobs, D. I., . . . . .	Wellesley.
Jones, E. A., . . . . .	New Canaan, Conn.
Knowles, Rev. Samuel, . . . . .	Lexington.
Lewis, I. C., . . . . .	Ulysses, Pa.
Lyon, Clarence W., . . . . .	South Weymouth.
Mayerison, T. Sydney, . . . . .	Lawrence.
Messier, A. E., . . . . .	Amherst.
Miller, H. B., . . . . .	South Hadley.
Miskell, T. L., . . . . .	Brookline.
Moody, F. W., . . . . .	Rutland.
Morgan, Susie P., . . . . .	Amherst.

Morse, John E., . . . . .	Hadley.
Neil, James J., . . . . .	Lawrence.
Northan, H. H., . . . . .	Westfield.
Parsons, W. E., . . . . .	New Hartford, Conn.
Pease, Mrs. E. E., . . . . .	Granby.
Pease, E. E., . . . . .	Granby.
Perkins, Maude, . . . . .	Newburyport.
Rice, W. A., . . . . .	South Hadley Falls.
Richardson, Harriet, . . . . .	South Hadley.
Rood, Frank W., . . . . .	Southampton.
Shaw, Wm. E., . . . . .	Belchertown.
Smith, Louis E., . . . . .	Salem.
Stuart, H. W., . . . . .	Amherst.
Sturgis, Mrs. Edward, . . . . .	Andover.
Talbot, H. S., . . . . .	South Hadley.
Thayer, Mrs. C. H., . . . . .	Amherst.
Thayer, H. A., . . . . .	Holyoke.
Speight, Thomas, . . . . .	East Longmeadow.
Torrey, E. D., . . . . .	Easthampton.
Warner, Merrill, . . . . .	Sunderland.
Warner, Robt. G., . . . . .	Florence.
White, Mrs. E. S., . . . . .	Roxbury.
Wolcott, Oliver, . . . . .	East Longmeadow.

## SUMMARY BY CLASSES.

Graduate students, . . . . .	21
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Sophomore class, . . . . .	125
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Pennsylvania, . . . . .	5
New Hampshire, . . . . .	4
Vermont, . . . . .	4
Maine, . . . . .	3
Rhode Island, . . . . .	3
Barbados, . . . . .	1
Colombia, S. A., . . . . .	1
Iowa, . . . . .	1
Kentucky, . . . . .	1
Maryland, . . . . .	1
Mexico, . . . . .	1
Ohio, . . . . .	1
Virginia, . . . . .	1
West Virginia, . . . . .	1
Total, . . . . .	556



## GRADUATE STUDENTS — CANDIDATES FOR A DEGREE.

Ackerman, Arthur John, . . . . .	Worcester.
B.Sc., Massachusetts Agricultural College, 1912.	
Anderson, David Wadsworth, . . . . .	Manchester, N. H.
B.Sc., New Hampshire State College, 1910.	
Bourne, Arthur Isreal, . . . . .	Kensington, N. H.
A.B., Dartmouth College, 1907.	
Davis, Irving Wilder, . . . . .	Lowell.
B.Sc., Massachusetts Agricultural College, 1911.	
Fowler, George Scott, . . . . .	Wayland.
B.Sc., Massachusetts Agricultural College, 1912.	
Gates, Rupert Granville, . . . . .	Northampton.
Ph.B., Sheffield Scientific School, 1912.	
Gilbert, George Henry, . . . . .	Boylston.
Ph.B., Boston University, 1901.	
Hall, Russell Bertram, . . . . .	Worcester.
B.Sc., Amherst College, 1912.	
Hutson, John Coghlan, . . . . .	Bridgetown, Barbados.
B.A., Oxford University, 1909.	
Martin, James Francis, . . . . .	Amherst.
B.Sc., Massachusetts Agricultural College, 1912.	
Morse, Henry Bowditch, . . . . .	Salem.
B.Sc., Massachusetts Agricultural College, 1911.	
Noyes, Harry Alfred, . . . . .	Marlborough.
B.Sc., Massachusetts Agricultural College, 1912.	
Parker, Ralph Robinson, . . . . .	Malden.
B.Sc., Massachusetts Agricultural College, 1912.	
Ruprecht, Rudolf William, . . . . .	Brooklyn, N. Y.
B.Sc., Rhode Island State College, 1911.	
Richardson, Francis Allen, . . . . .	Boston.
S.B., Harvard University, 1896.	
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B.Sc., Massachusetts Agricultural College, 1909.	
Thomas, Frank Lincoln, . . . . .	Athol.
B.Sc., Massachusetts Agricultural College, 1910.	
Tower, Daniel Gordon, . . . . .	Roxbury.
B.Sc., Massachusetts Agricultural College, 1912.	
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B.Sc., Massachusetts Agricultural College, 1912.	
Watkins, John Bedford, . . . . .	Midlothian, Va.
B.Sc., Virginia Polytechnic, 1911.	
Wehle, Harry Brandeis, . . . . .	Louisville, Ky.
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## GRADUATE STUDENTS — NOT CANDIDATES FOR A DEGREE.

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Rand, Frank Prentice, . . . . .	Worcester.
A.B., Williams College, 1912.	

## SUMMER SCHOOL REGISTRATION, 1911.

Aldrich, Helen, . . . . .	Dorchester.
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Bartlett, Mrs. Eugene, . . . . .	Chicago, Ill.
Bartlett, Rev. Eugene, . . . . .	Chicago, Ill.
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Belcher, S. Elizabeth, . . . . .	Worcester.

Bennett, Alfred C., . . . . .	New York City.
Blanchard, Lucile M., . . . . .	North Uxbridge.
Bonsfield, Mary, . . . . .	North Adams.
Boyd, Gardner, . . . . .	Dedham.
Bradlee, Thomas, . . . . .	Northampton.
Burke, E. G., . . . . .	Holyoke.
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Butcher, Gertrude, . . . . .	Roxbury.
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Car, Helen F., . . . . .	Boston.
Case, Myra W., . . . . .	West Hartford, Conn.
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Chalmers, Mary, . . . . .	New York.
Cheney, Hazel Chase, . . . . .	Amherst.
Chow, T. K., . . . . .	Amherst.
Church, Florence A., . . . . .	New York City.
Clark, Anna M., . . . . .	New York City.
Cleaveland, M. N., . . . . .	East Boxford.
Cole, Wm. Morton, . . . . .	Newton Highlands.
Cölln, Miss M. Von, . . . . .	Columbus, O.
Cushman, Mrs. F. P., . . . . .	Springfield.
Cushman, F. P., . . . . .	Springfield.
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Dame, Mrs. Lorin L., . . . . .	West Medford.
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Dimick, Julian A., . . . . .	East Corinth, Vt.
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Eldidge, Mrs. Lizzie, . . . . .	Amherst.
Epstein, Frances, . . . . .	Amherst.
Epstein, Ida A., . . . . .	Amherst.
Evans, Augusta D., . . . . .	Northampton.
Farley, Chas. Judd, . . . . .	Wellesley Hills.
Farnsworth, Earl H., . . . . .	Norwood.
Fisher, Georgina O., . . . . .	Cambridge.
Foley, Daniel, . . . . .	Brighton.
Foster, Mr. C. W., . . . . .	Leominster.
Fox, Sarah E., . . . . .	Cohasset.
Gere, Robt. W., . . . . .	Springfield.
Gerould, Mrs. C. W., . . . . .	Cambridge.
Gerould, Chas. W., . . . . .	Cambridge.
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Gregory, E. S., . . . . .	Somerville.
Groff, J. G., . . . . .	Amherst.
Hall, E. Josephine, . . . . .	Waltham.
Hea, Emily N., . . . . .	Medford.
Heidenheim, Hannah, . . . . .	Brooklyn, N. Y.
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Hidden, W. H., Jr., . . . . .	Cambridge.
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Howard, Mildred, . . . . .	North Amherst.
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Kellogg, Ella, . . . . .	North Amherst.
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Liang, F. T., . . . . .	Amherst.
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Lew, Gerard N., . . . . .	Amherst.
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Macomber, Lucy S., . . . . .	North Westport.
Maloney, Margaret, . . . . .	Amherst.
Manoukian, V. M., . . . . .	Boston.
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Matthews, Enid, . . . . .	Cambridge.
Mills, Mabelle, . . . . .	Amherst.
Mumma, C. H., . . . . .	Holyoke.
Nickerson, Charlotte, . . . . .	Amherst.
Ostrolenk, Theresa, . . . . .	Amherst.
Pabodie, Mrs., . . . . .	Hartwell, O.
Pabodie, Wm., . . . . .	Hartwell, O.
Perry, Sylvia, . . . . .	Amherst.
Peters, Thomas H., . . . . .	North Truro.
Petersen, Anna K., . . . . .	Everett.
Petersen, Ella O., . . . . .	Everett.
Petersen, Lilian O., . . . . .	Everett.
Phelps, Annie L., . . . . .	Boston.
Potter, Sara E., . . . . .	Roxbury.
Putnam, Chas. S., . . . . .	Walpole, N. H.
Quint, Harry, . . . . .	Roxbury.
Richards, J. L., . . . . .	Brookline.
Roberts, Fanny E., . . . . .	Brooklyn, N. Y.
Roberts, Jessie, . . . . .	Kingston, N. Y.
Robinson, Mrs. A. M., . . . . .	South Boston.
Robinson, Dr. M. B. (Miss), . . . . .	Waltham.
Roys, Mabelle F. (Mrs.), . . . . .	Boxford.
Roys, Rev. Edville A., . . . . .	Boxford.
Seaverns, Annie W., . . . . .	Jamaica Plain.
Shaw, Rev. Arthur W., . . . . .	Goffstown, N. H.
Sherman, Frank M., Jr., . . . . .	West Newton.
Sherman, Sara L., . . . . .	Weston.
Sherrard, Evelyn B., . . . . .	West Waltham.
Shumway, Ruth, . . . . .	Amherst.
Simmons, Alva N., . . . . .	Roslindale.
Sloane, Laura, . . . . .	Amherst.
Smith, John F., . . . . .	Berea, Ky.
Souther, Marguerite, . . . . .	Jamaica Plain.
Strickland, Elinor, . . . . .	Amherst.
Stutson, Miss P. B., . . . . .	Columbus, O.
Sun, Y. Philander, . . . . .	Worcester.
Sussman, Rudolf, . . . . .	Sharon.
Story, Mrs. G. E., . . . . .	Amherst.
Tobin, Ellen C., . . . . .	Lawrence.
Tucker, Arabella H., . . . . .	Worcester.
Vining, Roscoe H., . . . . .	Ipswich.
White, Mrs. Ellen S., . . . . .	Grove Hall.
Whitman, Adelaide, . . . . .	Amherst.
Whitney, Jos. T., . . . . .	Medford.
Williams, Guy F., . . . . .	North Anson, Me.
Wiswell, Ralph A., . . . . .	Newton Center.



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FIFTIETH ANNUAL REPORT  
OF THE  
MASSACHUSETTS  
AGRICULTURAL COLLEGE.

PART I.

REPORT OF THE PRESIDENT AND OTHER OFFICERS

FOR FISCAL YEAR ENDED NOV. 30, 1912.



BOSTON:  
WRIGHT & POTTER PRINTING CO., STATE PRINTERS,  
18 POST OFFICE SQUARE.

1913.



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FEBRUARY, 1913.



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1913.

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THE STATE BOARD OF PUBLICATION.

# The Commonwealth of Massachusetts.

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MASSACHUSETTS AGRICULTURAL COLLEGE,  
AMHERST, Dec. 2, 1912.

To His Excellency EUGENE N. FOSS.

SIR:— On behalf of the trustees of the Massachusetts Agricultural College I have the honor to transmit herewith, to Your Excellency and the Honorable Council, Part I. of the fiftieth annual report of the trustees, for the fiscal year ended Nov. 30, 1912, this being the report to the corporation of the president and other officers of the college.

I am, very respectfully, your obedient servant,

KENYON L. BUTTERFIELD,  
*President.*



## REPORT OF THE PRESIDENT OF THE COLLEGE.

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*Gentlemen of the Corporation.*

I herewith submit my annual report as president of the Massachusetts Agricultural College.

Each administrative officer has been asked to present a résumé of the year's work coming under his jurisdiction, and this material has been freely utilized in the present report. Following the precedent of a year ago, the report divides itself into three fairly distinct portions:—

1. A REVIEW OF THE YEAR (page 5).
2. A STATEMENT OF IMMEDIATE NEEDS (page 23).
3. THE RELATION OF THE COLLEGE TO THE ORGANIZATION OF MASSACHUSETTS AGRICULTURE AND COUNTRY LIFE (page 28).

These discussions are followed by the usual data concerning students, etc., and by the annual report of the treasurer of the institution.

### **A REVIEW OF THE YEAR.**

#### **ATTENDANCE.**

The attendance of students enrolled in the four years' course at this date is 502, an increase of 25 over the enrollment of a year ago. In addition to this enrollment there are 22 members of the graduate school, and 31 students registered in college classes as "unclassified" students. Therefore, the total number of students doing work of college grade is 555, an increase of 34 over the total enrollment of last year. The entering class this fall numbered 184, a small increase over the number entering last year. (See Table I.)

Nearly 86 per cent. of those entering this year come from Massachusetts, and 8 other States are represented. The proportion of non-residents does not seem to have decreased, although the rule requiring a tuition fee from such students is now in force.

Every county in Massachusetts, with the exception of Nantucket, is represented in the present freshman class, Middlesex County sending the largest number, which is 34, or nearly 22 per cent., of the total number entering. (See Table V.)

One-fifth of the class are undecided as to their intended vocation; over one-third of the entire class express their intention of following some line of professional agriculture or horticulture as their life work, and about two-fifths more signify their intention of entering some vocation in practical agriculture or horticulture; nearly 94 per cent. of those having made a decision, therefore, intend to follow an agricultural vocation. Twenty-six per cent. of the fathers of the members of the freshman class are engaged in agriculture or horticulture, and about the same per cent. are business men. Approximately one-third of the class come from farms, and two-fifths have had no farm experience whatever. The average age of the entering class is 19.22 years. All of these statistics show practically the same results as those compiled for the class entering one year ago. (See Table V.)

#### APPROPRIATIONS.

The trustees presented to the Legislature of 1912 requests for special appropriations amounting to approximately \$386,000, the principal items in the list being an agricultural building, a students' dormitory, an addition to French Hall, and an addition to Draper Hall; of this amount \$80,000 was granted, providing for the addition to Draper Hall, sewers, repairs, improvements and equipment. An increase of \$109,000 in current annual appropriations was asked, and a large portion of it was granted, making the total annual income from the State \$250,000. (See Table II.)

#### CONSTRUCTION AND REPAIRS.

Six buildings have been completed during the past year, namely, the dairy building (Flint Laboratory), completed about the middle of August at a cost of \$75,000, the apiary, completed in June at a cost of \$3,000, and four much-needed buildings for the poultry department.

There have been numerous repairs and improvements during the year, probably the most noticeable of which is the painting of many of the college buildings, in colors recommended by our



consulting architect. For example, several of the frame buildings have been painted a colonial gray, trimmed with "M. A. C. white."

One of the most needed improvements has been the building of the extension to the dining hall. This change is not quite completed. The addition provides a fine separate lunch room, and also increases the seating capacity of the main dining hall by 120. The maximum capacity of the dining quarters is now not far from 800.

Other improvements have been the remodeling of the offices of the treasurer in south college, the refitting of the laboratory on the third floor of the chemical building, the fitting up of a new bacteriological room in the basement of the veterinary building, the enlargement of the agronomy laboratory in south college; also an extension to the power plant which was very much needed and which gives the necessary room for storage for general supplies. There have also been many minor repairs and improvements.

#### COMMENCEMENT.

The annual commencement occurred June 19. At that time the degree of Bachelor of Science was conferred on 83 men, thus making the class about a third larger than any class previously graduating. The college also conferred the degree of Master of Science on one candidate, and the degree of Doctor of Philosophy on one. Hon. Charles W. Garfield of Grand Rapids, Mich., delivered the commencement address on "The Business Conscience." The Lieutenant-Governor, Hon. Robert Luce, was present as the representative of the Commonwealth. The attendance at the alumni dinner was 230.

#### SUMMER CONFERENCE.

The summer school of 1912 was omitted. There was held, however, the third annual "Conference for Rural Leaders," the enrollment at which was 184. In this connection there was for the second year a large and interesting exhibit of rural social work, illustrating various forms of the service which is being undertaken for the betterment of rural communities.

The conference this year was not only very satisfactory in its program and in the attendance, but it was particularly notable by reason of the fact that it was the result of the co-operation of a

number of different institutions and agencies interested in country life, the college serving chiefly as a clearing-house by which these institutions participated in the program. The following organizations co-operated with the college and were officially represented: Federation of Churches of Massachusetts; State Board of Education; Free Public Library Commission; Massachusetts Civic League; State Board of Health; County Work of Y. M. C. A.; County Work of Y. W. C. A.; New England Home Economics Association; the Russell Sage Foundation; the Massachusetts Board of Home Missions; Smith's Agricultural School; American Civic Association; New York Child Welfare Exhibit; Massachusetts Society for Prevention of Cruelty to Children.

#### THE WINTER SCHOOL.

The attendance at the winter school of 1912 was 131, this number being slightly larger than that of the previous year. The poultry course, which was given during the last two weeks of the winter school, brought an additional number of persons to the college. At the close of the winter school the annual farmers' week was held; over a thousand people registered during these three days of instruction.

#### VISITS OF OUTSIDE ASSOCIATIONS.

During the year numerous associations, not officially identified with the institution, have held meetings at the college; the following is a list, doubtless incomplete, of such meetings:—

February	7, 8.	Apiary Inspectors of Northeastern United States and Canada.
March	5.	Tenth District Massachusetts State Poultry Association.
March	10.	Connecticut Valley Breeders' Association.
March	13.	Massachusetts Dairymen's Association.
March	15.	Massachusetts Sheep Breeders' Association.
June	13.	Hampshire, Hampden and Franklin Beekeepers' Association.
June	26, 27.	Library Institute (Auspices of Free Public Library Commission).
October	14.	Hampshire, Hampden and Franklin Beekeepers' Association.

## THE MAJOR SYSTEM.

At the beginning of the current college year a system of major subjects became effective. This is an arrangement whereby at the close of the sophomore year each student is required to elect a specific subject in one of those departments offering work organized as a major. During the junior and senior years the student is required to take a minimum of thirty hours' work in his major subject, a minimum of fifteen hours in the divisions of the humanities and rural social science, and a minimum of fifteen hours additional which may be elected at will by the student.

Each student is under the supervision of a major adviser, who ordinarily is the head of the department offering the major course.

At present the following subjects are open as major courses; the titles of the major courses, and the number of juniors electing each major, are indicated in the table (obviously, the major system is not yet in complete operation, owing to the fact that members of the present senior class were unable to elect a major in the prescribed manner): —

Agriculture, . . . . .	11
Agronomy, . . . . .	2
Animal husbandry, . . . . .	11
Dairying, . . . . .	2
Poultry husbandry, . . . . .	3
General horticulture, . . . . .	4
Floriculture, . . . . .	5
Forestry, . . . . .	—
Landscape gardening, . . . . .	18
Pomology, . . . . .	25
Agricultural chemistry, . . . . .	11
Economic entomology, . . . . .	6
Plant physiology and pathology, . . . . .	1
Agricultural education, . . . . .	3
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Total, . . . . .	102

## NEW APPOINTMENTS.

The following appointments to major positions on the teaching and extension service staff have been made by the trustees during the year: —

Charles E. Marshall was elected director of the graduate school and professor of microbiology. Dr. Marshall comes from the Michigan Agricultural College, where for many years he has been head of the department of bacteriology. Dr. Marshall was trained chiefly at the University of Michigan, from which he holds the degree of Doctor of Philosophy. At the Michigan Agricultural College he developed the work of his department both in scientific investigation and in the solution of practical problems confronting the farmers of the State. He was also vice-director of the experiment station. Dr. Marshall is one of the foremost microbiologists of the country, is an active leader in many scientific associations, and is a recognized authority in the department of learning to which he gives his chief attention.

William D. Clark was elected professor of forestry in place of Associate Professor Moon, resigned. Professor Clark graduated from the classical course of Yale University and from the forestry school at the same institution. He has had a wide experience in forestry, which has taken him to many forests of the United States, including those of Porto Rico, Texas and the Rocky Mountains. For the past three years he has been connected with the school of forestry at the Pennsylvania State College.

Ernest Anderson was elected assistant professor of general and physical chemistry. Dr. Anderson received the degree of Bachelor of Arts at Trinity College, Texas, in 1903. Later he graduated at the University of Texas and pursued graduate study at that institution. In 1906 he entered the University of Chicago as an advanced student in chemistry and as an assistant on the teaching force of that department. In 1909 he was granted the degree of Doctor of Philosophy from that university. Dr. Anderson's work, in addition to that of teaching, has led him into chemical research under one of the foremost research chemists in the country.

Ezra L. Morgan was appointed community field agent in the extension service. Mr. Morgan was reared on a farm in the middle west, and graduated from the McKendree College, Ill., in 1904. Subsequently he spent six years in county Y. M. C. A. work. For the past two years he has been engaged in graduate study in economics and rural sociology at the University of Wisconsin, which institution granted him the degree of Master of Arts in 1912.

Orion A. Morton was elected to a vacancy in the department of agricultural education occasioned by the resignation of Floyd B. Jenks. His work is chiefly in the extension service and will consist in part of the development of boys and girls' clubs throughout the State. Mr. Morton is a normal school graduate and has spent several seasons at the summer schools of the Hyannis Normal School, the Massachusetts Agricultural College, and the Teachers' College, New York City. He was for many years superintendent of public schools at Marlborough, Mass., where he made a notable reputation as an able administrator and as an educator of liberal views.

Henry E. Smith was elected assistant professor of English. Professor Smith received his advanced training at the University of Chicago and at Yale University where he earned the degree of Master of Arts. He has had wide experience as a teacher, having served on the faculty of the North Dakota Agricultural College, the Washington State Normal School, Tabor College, Iowa, and Westminster College.

The following-named instructors and other officers of the institution have been engaged during the year:—

*In the Academic Departments.*

POSITION.	Name.	Institution from which graduated, and Degrees.	Year of Graduation.
Assistant in chemistry, .	Robert H. Bogue, . . .	Tufts College, B.Sc., . . .	1912
Instructor in poultry husbandry.	Abbott A. Brown, . . .	University of Wisconsin, B. Sc. Agr.	1912
Instructor in pomology, .	Walter W. Chenoweth, .	University of Missouri, M.Sc., B.A.	1912
Buttermaker, . . . .	Samuel Coons, . . . .	- - -	-
Assistant in physical education.	William J. Fitzmaurice, .	- - -	-
Instructor in agronomy, .	Elmer M. McDonald, . .	University of Illinois, B.Sc. Agr.	1910
Instructor in English and public speaking.	Walter E. Prince, . . .	Brown University, B.A., M.A.	1907

*In the Experiment Station.*

Assistant chemist, . . .	Carlos L. Beals, . . . .	Massachusetts Agricultural College, B.Sc.	1912
Secretary to the director, .	Benjamin G. Southwick,	Massachusetts Agricultural College, B.Sc.	1912
Assistant in horticulture, .	Howard A. Turner, . . .	Massachusetts Agricultural College, B.Sc.	1912

*In the Extension Service.*

POSITION.	Name.	Institution from which graduated, and Degrees.	Year of Graduation.
Expert in farm management,	Herbert J. Baker, <sup>1</sup>	Massachusetts Agricultural College, B.Sc.	1911
Supervisor of correspondence courses.	Arthur T. Dailey,	University of Vermont, B.Sc.	1911
Field agent, Barnstable County.	Albert W. Doolittle (part time).	- -	-
Instructor in pomology,	Ralph W. Rees,	Oregon Agricultural College, B.Sc.	1911

<sup>1</sup> Transferred from the experiment station.

*In the Clerical Force.*

Cashier, treasurer's office,	HAROLD A. CRANE.
Clerk, department of chemistry,	MISS LINA FISHER.
Stenographer, experiment station,	MISS GRACE E. GALLOND.
Clerk, extension service,	MISS HANNAH GRIFFIN.
Clerk, department of poultry husbandry,	MISS MARY R. KINGSBURY.
Clerk, dean's office,	MISS VIRGINIA NOBLE.
Stenographer, division of horticulture,	MISS GLADYS E. RUSSELL.

## THOMAS CANAVAN.

The following resolutions on the death of Mr. Thomas Canavan, which occurred July 14, 1912, were adopted by the trustees' committee on buildings and grounds and subsequently by the Board of Trustees:—

Mr. Thomas Canavan, who passed away July 14, 1912, was for forty-five years the faithful and loyal servant of the Massachusetts Agricultural College. His efficient services were always highly valued; his personality gained for him universal respect, and his kindly attitude toward all endeared him to those with whom he came in contact.

The trustees of this institution join his many friends among alumni, faculty, and students in mourning his loss, and hereby desire to record their expression of sympathy to his daughter and other relatives in these days of sorrow.

## RESIGNATIONS.

S. Francis Howard, after a year's leave of absence which was spent in study at Johns Hopkins University, and which gained for him the degree of Doctor of Philosophy, resigned as assistant professor of chemistry. Professor Howard has devoted fourteen years to efficient work in teaching in the department of chemistry. As a loyal alumnus, hard-working teacher, and earnest man, Professor Howard had made a splendid record of service.

Frederick F. Moon resigned as head of the department of forestry to accept a similar position at Syracuse University. Professor Moon succeeded in his two years' incumbency of this position in establishing the department on a sound basis and the teaching on a high level of effectiveness and enthusiasm.

Floyd B. Jenks resigned his position in the department of agricultural education to accept a call as expert in agricultural education in the United States Bureau of Education. Professor Jenks had laid good foundations for a plan of organized agricultural education as a part of the State public school system.

The following table indicates all resignations that have occurred during the year:—

POSITION.	Name.	Successor.
Assistant in chemistry, . . .	Harold S. Adams, . . .	Robert H. Bogue.
Secretary to the director of the experiment station.	Herbert J. Baker, <sup>1</sup> . . .	Benjamin G. Southwick.
Clerk, division of horticulture, . . .	Helen Granger, . . .	Gladys E. Russell.
Assistant professor of chemistry, . . .	S. Francis Howard, . . .	- -
Supervisor of correspondence courses, . . .	Albert R. Jenks, . . .	Arthur T. Dailey.
Assistant professor of agricultural education.	Floyd B. Jenks, . . .	Orion A. Morton.
Associate professor of forestry, . . .	Frederick F. Moon, . . .	William D. Clark.
Extension instructor in pomology, . . .	Alvah J. Norman, . . .	Ralph W. Rees.
Assistant, experiment station, . . .	George R. Pierce, . . .	- -
Secretary to director of experiment station.	Benjamin G. Southwick, . . .	- -
Assistant in horticulture, experiment station.	Howard A. Turner, . . .	- -
Assistant in chemistry, . . .	William A. Turner, . . .	- -
Instructor in English and public speaking.	Howard DeF. Widger, . . .	Walter E. Prince.

<sup>1</sup> Transferred to extension service.

*Change in Title of Officers of the Institution.*

NAME.	Former Title.	Present Title.
Edward M. Lewis, . . .	Assistant dean and assistant professor of literature.	Associate dean and professor of literature.
Alexander E. Cance, . . .	Assistant professor of agricultural economics.	Associate professor of agricultural economics.
Clarence E. Gordon, . . .	Assistant professor of zoölogy and geology.	Associate professor of zoölogy and geology.
Sidney B. Haskell, . . .	Assistant professor of agronomy,	Associate professor of agronomy.
Charles A. Peters, . . .	Assistant professor of inorganic and soil chemistry.	Associate professor of inorganic and soil chemistry.

## THE YEAR IN THE DEPARTMENTS OF INSTRUCTION.

*In the Division of Agriculture.* — Progress has been made in furnishing the division of agriculture with much-needed room and equipment. Flint Laboratory, the new dairy building, was finished and available for use Sept. 1, 1912; it has been made temporary headquarters for the division, furnishing offices for all the departments and several classrooms and laboratories other than those used by the dairy department. The whole building, however, should, in the very near future, be available for the uses for which it was designed, namely, dairy instruction and investigation. The equipment and machinery for this building, including refrigerating machinery, have been installed and will give opportunity for the best instruction in all branches of the dairy business. The teaching force of this department has been increased by the addition of an assistant who will devote most of his time to the laboratory work.

In the department of animal husbandry, the dedication of the Grinnell Arena during farmers' week should be mentioned. The work of the department has also been improved by the construction of a sheep barn, and the purchase of sheep for instructional purposes. A pair of pure bred Percheron mares have also been purchased during the year.

The equipment of the department of poultry husbandry has been increased by the addition of a laboratory building, a breeding house, the completion of a long laying house and facilities for experimental incubation, apart from the student incubator cellar. The increasing work of this department has demanded the services of an additional instructor. Through the extension office many calls come for the services of the head of this department, and the additional teaching assistance will give him more time to devote to this outside work.

The equipment of the department of agronomy has been somewhat increased by fitting up the laboratory in the basement of south college, formerly used by the department of dairying. This increase, however, does not keep pace with the increased registration of students. The instruction force of this department has been supplemented by the employment of another instructor.

The department of farm administration has begun a series of



field investigations in farm management, under a co-operative arrangement between the extension service and the office of farm management of the United States Department of Agriculture.

The addition of 62 acres of land adjoining the south boundary of the college farm has not heretofore been noted. This is excellent land, but not now in a high state of cultivation; a good deal of it has been cleared during the year and will be brought into good tilth as soon as possible.

*In the Division of Horticulture.* — The work in the various departments of this division has, during the past year, progressed along much the same lines as followed formerly. The gardens, orchards and greenhouses are used extensively as laboratories and are considered as of utmost value in augmenting the classroom instruction given in the different studies. The new fruit-packing and storage building is constantly proving its worth as a laboratory for those specializing in pomology.

The department of landscape gardening is now entirely responsible for the care of the college grounds; this arrangement has been observed for about three years and the advantage of assigning the full responsibility to one department is constantly in evidence; a marked improvement has been noted during the past year in the general appearance of the lawns, walks and drives of the campus.

*In the Division of Science.* — The chairman of the division states that "there has been no change in organization since the last catalogue was prepared. The several departments are working in harmony, although necessarily very independently of each other as relates to the collegiate work.

"I am of the opinion, gained from talks with the men at the head of the several departments, that the most pressing need at the present time, from the academic point of view, is a major course in pure agricultural science. By this is meant a course that would fit graduates to take up lines of scientific work in agricultural or other scientific institutions, and enable them to hold their own with graduates of other institutions that make a specialty of fitting men for scientific teaching and investigation."

*In the Division of the Humanities.* — The division, in the opinion of its head, is in a "state of flux until it is seen how the major

system of courses will operate. There may be an elimination of some courses unfit to survive by the gravitation of students in search of the best work for their minor requirements. It will take a year or two more to see clearly how the elective courses will tend."

There are several courses in the division with small registration; and unless these courses are more freely elected, doubtless they should be dropped. It is important to gather equipment about the best courses, make them profitable and interesting, and use the energies of the faculty where they will count for greatest fruitage. The head of the division places emphasis upon a wider study of literature as well as on the need of increasing somewhat the opportunities for the study of general narrative history in order to enable students to get historic facts for the background of their other work.

Probably no departments of the institution appreciate the limitations of our present library facilities so fully as the various departments in this division. The library quarters are very much restricted. The ventilation is not good. There is neither room nor table space for individual work. In fact, the whole equipment is entirely inadequate for satisfactory work. A college library in no small degree determines the standing of the institution. If facilities for good library work are absent, it seriously affects the efficiency of the scholarship.

The departments feel seriously the need of a building which will house all the departments of the division of the humanities under one roof. As it is, the various departments, and even the instructors, are scattered about the campus, — many of them without definite headquarters. Under these conditions, *esprit de corps*, concentration of effort, and administrative efficiency are difficult to maintain.

*In the Division of Rural Social Science.* — This division consists of the three departments of agricultural education, agricultural economics and rural sociology.

In agricultural education the effort thus far in the collegiate work has been to prepare teachers for agricultural high schools. The number of men doing this work has been somewhat disappointing; this is probably due in part not only to the fact that commercial positions pay larger salaries, but that to the average

man the work is more attractive. Many men are willing to teach only as a last resort. Our students, perhaps, do not yet sufficiently realize the opportunities for interesting work and helpful service that are available to the teacher of agriculture. The salaries paid are not excessive, but they are reasonably fair. It is to be said that the present enrollment in the various courses offered in the department shows a gratifying increase.

In the department of agricultural economics the main strength of the work lies at present in the course required of all sophomores. This course gives to all our students an introduction to the economic problems that confront the agricultural business. There are also advanced students who are investigating some of these problems in a specialized way.

The department of rural sociology should have an introductory course required of all students, but it has not as yet been possible to bring that about. When that is done, all our students before entering the junior year will have had an introduction to the whole field of the agricultural problem, in its practical, scientific, economic and social aspects.

There is a strong feeling on the part of the instructors in agricultural economics and rural sociology that majors should be offered in both of these departments in order that men may specialize and fit themselves for some of the new positions that are opening for men trained in these subjects.

*In the General Departments. Library.* — During the past year 2,535 accessions were made to the library collection; the total number of volumes now in the library exceeds 40,000. The task of recataloguing has continued with gratifying rapidity; in the last year over 7,700 books were recatalogued, and the total number recatalogued since the work was started in 1909 is 18,430.

About a year ago the library publicly announced that it was prepared to loan collections of books on agriculture and country life to libraries in the State; in ten months 37 of these circulating libraries were sent out; an average of 24 books and pamphlets were shipped each time and these were widely distributed through the local libraries.

The faculty and students now use the library to a greater extent than ever before, and are constantly making it a real educational

laboratory. For this and other reasons the need of adequate library space is felt very keenly by all.

*Military Science.* — During the past year the regiment has been divided into two battalions of three companies each and a band; the companies average about 55 men. All the members of the three lower classes are required to drill, and at present 19 members of the senior class are electing drill, making the total enrollment in the military department 430. No men are excused permanently from drill; those physically unable to drill are required to work in the office or on the rifle ranges. The general instructions of the war department have been fully complied with; three hours of practical work a week during drill periods are required of all students enrolled in the department. In addition, theoretical instruction is given to members of the sophomore and junior classes one hour a week during the year. Great interest is still maintained in rifle practice; the indoor rifle team again won the intercollegiate championship of the United States, while the outdoor team won second place.

*Physical Education and Hygiene.* — The work of the department during the past year has been conducted along the following lines: —

1. The physical examination of each freshman to ascertain the condition of health and physical development, and to detect defects which may exist, especially in sight, hearing, heart and lungs. Each person thus examined is advised as to the proper form of exercise to take to suit his individual condition. The examination and interview require about thirty minutes for each man.

2. The freshman class receive instruction in physiology and personal hygiene through a course of lectures given by the physical director.

3. During the winter months the department requires three hours of physical exercise per week of each member of the three lower classes. Those men who have been found by examination to be physically normal are permitted to elect one of the several athletic activities; those who have been found to be below normal, physically, are given individual instruction. Walking trips may be substituted for physical exercise in the gymnasium; during the past year from 75 to 100 students elected this form of exercise.

4. The work of the indoor classes of from 30 to 40 men consists of gymnastic exercises and such games as basket ball and indoor baseball.

5. The physical director is general manager of athletics, supervising the arrangements for contests with other colleges, buying the supplies for the teams, assisting in the coaching, and having final control of the conduct of players and games, and encouraging the student body to compete in intramural contests.

#### THE GRADUATE SCHOOL.

During the year Dr. Charles E. Marshall of the Michigan Agricultural College was elected to the position of director of the graduate school. Dr. Marshall contemplates making in the near future a thorough study of the organization and work of graduate schools of agriculture and allied sciences, both in this country and abroad. After his return to the college, which will be prior to the opening of the next college year, it is expected that he will make a full report to the faculty and trustees, embodying recommendations as to the future development of the graduate school at this institution.

#### THE YEAR IN THE EXPERIMENT STATION.

I regret to report that during the spring Dr. W. P. Brooks, director of the experiment station, became seriously ill. He was immediately granted a leave of absence and is still on leave. During the autumn his convalescence has been rapid, and it is sincerely hoped that in the near future he will again be at his important post with recovered strength.

*Agricultural Department.* — The work of experimentation with fertilizers on various plants has gone on as in the past. The Graves' orchard yielded heavily, the estimated value of the fruit being \$500. The asparagus field at Concord bore a large crop for its fourth year's cutting, and the lightness of the attack of rust that it suffered gives promise of satisfactory results next year. The cranberry bog is in excellent condition, and while the crop was light this year, a maximum yield is anticipated for next season.

*Botanical Department.* — The routine work of this department has been similar to that of other years, consisting of the diagnosis

of diseases, determination of plants, correspondence of a technical nature, seed germination, separation and purity testing.

*Department of Plant and Animal Chemistry.* (a) During the year the research work has made substantial progress; at present, four experts give practically their entire time to this activity.

(b) The inspections have gone on with satisfaction; during the year over 1,100 samples of fertilizers and 1,000 samples of feedstuffs have been collected and analyzed.

(c) Samples of agricultural products such as milk, cream, concentrated and coarse fodders, soils, waste products suitable for fertilizing purposes, waters, vinegars and the like are constantly being received, examined and reported upon.

(d) Work in connection with animal nutrition includes the examination of feedstuffs, milk and butter, and in plant nutrition, the analysis of crops and soils.

*Department of Entomology.* — Over a thousand field tests have been made in studying the burning of foliage by insecticides. Good progress is noted in studying parasites. Observations on dates of hatching of scale insects have continued, and also the study of methods of controlling the wire worm. Experiments were for several months conducted on the onion maggot, and several commercial insecticides were tested.

In apiculture, the work on color vision of bees is progressing; photographic and numerical records have been kept. Study has been given upon an instrument for counting hive bees as they pass into a hive, and upon the transportation of bees without combs. Important observations have been made on the use of bees in greenhouses.

*Department of Horticulture.* — The experimental work of the year has gone on without special incident; studies on the climatology of the apple have been published during the year and constitute a notable contribution to the scientific knowledge of pomology. The work in plant breeding has been making excellent progress.

*Department of Poultry Husbandry.* — Three lines of experimentation are being undertaken: (1) individuality in hens, studied by trapnesting, and subsequently determining the egg-yield, percentage of fertility, and hatchability; (2) digestion experiment to determine value of a widely advertised hen food; (3) effect of food on flavor and odor of eggs.

*Department of Meteorology.* — The work of the year has necessarily followed the routine of previous years; co-operation with the Weather Bureau has been continued as usual, and the regular monthly issue of the weather bulletin has been kept up.

*Department of Veterinary Science.* — Investigation of obscure diseases of animals has been carried on in response to requests for information, as, for example, the recent definite determination of white diarrhœa in chicks.

#### THE YEAR IN THE EXTENSION SERVICE.

No attempt has been made to enlarge the activities of the service during the past year, but a consistent effort has been made to organize, systematize and to put on a sounder basis the different lines of work which we are called upon to do. The work on the whole for the year has progressed in a satisfactory manner, and has unquestionably grown in the respect of the people of the State. The annual appropriation for this work was increased from \$20,000 to \$50,000 by the Legislature of 1912.

Considerable time has been spent in planning a type of organization which will enable every department of the college to contribute in some measure to the work of the service, and at the same time insure unity, harmony and efficiency of administration and teaching. To the end that the work of other institutions might be studied, the director made a trip to institutions in Wisconsin, Iowa, Nebraska, Kansas, Missouri, Illinois and Indiana. When the material and information obtained on this trip can be worked over, valuable suggestions for the work here will be forthcoming.

#### *New Features of the Work during 1912.*

A very successful apple-packing school was conducted by the department of pomology, assisted by an expert from Hood River, Ore.

Extension schools five days in length were held in five towns. Judging from the reports which have come from these communities, these schools are the best pieces of extension service carried on away from the college.

Work by the extension service in community studies has been started, involving a definite policy and program for co-operation of all agencies within communities, for social, economic, religious and educational advancement.

The boys' and girls' club work is being further organized. Exhibits and round-up meetings have been held this fall. Schools all over the State are rapidly being brought into line for work next year. The records in a contest for boys, the prizes in which will be free trips to Washington, Boston and farmers' week at Amherst, are now nearly complete.

Field agent work has been started in Barnstable County.

A definite program for work in civic improvement is being developed.

Through the generosity of a friend of the college, the services of a woman expert in home economics were given to the college for a period of three months during the year. She gave instruction in domestic science in the extension schools, and visited several towns. The need of this work was shown by its immediate popularity and the large number of requests which at once came from several communities for more of this teaching.

Fourteen stock-judging contests for boys were arranged and conducted at as many agricultural fairs. More than a hundred boys competed, and a goodly number participated in the final contest at Brockton, in which scholarships at the college were offered as prizes.

#### *Co-operation with Other Organizations.*

The policy of co-operating with other worthy organizations in any useful work which comes within the province of the agricultural college is being adhered to. Further co-operation between the organizations mentioned on pages 27-28 of the 1911 report has taken place.

New relationships have been established. This year the Pittsfield and Milford Y. M. C. A.'s will have a series of meetings. A good deal of work has been done for the western Hampshire board of trade. Assistance has been rendered the social service commission of the Massachusetts Federation of Churches. Several organizations not previously represented held meetings at the college during farmers' week.

Due to some visits of extension men to other State institutions, twenty-five farm superintendents and other officers of these institutions attended farmers' week.



A desire and willingness on the part of existing organizations all over the State to co-operate in movements for upbuilding the rural life of the Commonwealth is found to be almost universal.

So many of the recommendations made on pages 30-31 of the 1911 report still remain to be carried out that it seems almost useless to add more at the present time. Of those mentioned, the director desires to emphasize two, and to ask that these be given consideration before other things are taken up:—

1. That a travelling instructor, provided with an automobile and equipment, be engaged for demonstration work in rural districts.

2. That a woman with a training in home economics, who possesses good organizing ability, be engaged for extension work in home economics and domestic science.

There will be need of more money by the end of the present year. Every effort should be made to secure the passage by Congress of the agricultural extension bill. Even though this passes, appropriations of at least \$10,000 for specific purposes in addition to what the State is now giving should be asked for in the budget that is to be made up in October, 1913.

#### **THE IMMEDIATE NEEDS OF THE COLLEGE.**

Fundamentally, the need of increased appropriations, both for maintenance and for buildings, is due in part to the growth of the college in number of students, but also in part to the increased activities of the college made necessary by the rapidly enlarging field of agricultural research, instruction and dissemination. Our understanding of the rural problem in Massachusetts is constantly broadening, and as our conception of the problem broadens, the necessity of broadening the work of the college in order to help solve the problem also develops.

No attempt is made at this point to discuss the needs of the college for increased appropriations, except those that are of immediate consequence. Perhaps the most effective way of indicating the present needs of the college is to outline the reasons that underlie the action of the trustees in formulating the legislative budget for the ensuing year.

## THE LEGISLATIVE BUDGET FOR 1913.

The budget to be presented to the Legislature of 1913, as approved by the Board of Trustees at its meeting in Boston, Nov. 8, 1912, may be summarized as follows:—

*For Increase in Current Annual Appropriations.*

	Available for 1913.	Requested for 1914.	Increase.
Investigation, . . . . .	\$15,000	\$30,000	\$15,000
Instruction, . . . . .	75,000	95,000	20,000
Repairs, . . . . .	—	15,000	15,000
	—	—	\$50,000

*For Special Purposes.*

Agricultural building, . . . . .	\$210,000
General improvements and repairs, . . . . .	40,000
Land and sewers, . . . . .	—

*Statement of Reasons for Requested Increases in Current Funds.*

*For Investigation.*—Heretofore the burden of financing investigations and experiments carried on by the institution through its agricultural experiment station has been borne chiefly by the national treasury, from which we have secured for some years about three-fourths of the annual cost of the experiment station. Last year the Legislature added \$4,500 to the investigation item, with the unwritten understanding that the major part of it was to be used for investigations in poultry culture. There are, however, a great many lines of investigation applicable to the needs of Massachusetts farmers, and highly important in themselves, that are being neglected by the institution simply for lack of funds. The trustees ask, therefore, that the annual appropriation for investigation be increased from \$15,000 a year to \$30,000 a year. Some of the projects which it is proposed to take up with these increased funds are listed as follows:—

In floriculture: The study of certain plants with regard to their value for forcing for winter bloom; the study of factors by which the light efficiency of greenhouses may be increased; the effect

of commercial fertilizers on carnations; the effect of different fertilizers on roses; co-operative experiments with regard to insect and fungous diseases troubling greenhouse plants.

In market gardening: Storage experiments with vegetables, both as regards probable preservation and market values.

In veterinary science: The study of important animal diseases along lines that are not being worked out elsewhere in the State.

In microbiology: Investigations in soil bacteriology. This is a line of work that is almost completely neglected, and yet of the utmost consequence in agricultural science.

In pomology: Spraying experiments with special reference to the aphid and curculionid; experiments in soil management in apple orchards; experiments with fertilizers in peach orchards; experiments in plum growing; studies of the adaptation of apple varieties.

*Studies of Agricultural Practices and Conditions.* — The college has been endeavoring for some years to secure sufficient funds to prosecute fundamental studies of the actual practices and conditions under which the farmers of the State are working. For example, a thoroughgoing study of present methods of dairy management will perhaps do as much as any other one thing to assist the dairymen to a larger success, especially if this study is combined with a careful investigation of the market conditions under which milk is sold and distributed. The milk question is perennially before us for discussion, and yet with all that has been said the most conspicuous fact is our lack of knowledge of actual conditions of production and marketing. There is no single appropriation that can be made by the Legislature that will be of larger service in settling this problem than an appropriation which will permit experts to study thoroughly the conditions which surround the business. What has been said of dairy farming applies equally to other phases of agriculture in the State. It is high time that this institution is supported by the Legislature in its desire to study all of those conditions under which the farmer must work, and to study with sufficient thoroughness to be of practical assistance to him.

*Instruction.*

The trustees recommend an increase in the annual appropriation for instruction from \$75,000 to \$95,000. Although we have added considerably to our instruction force in the last few years, that staff is still inadequate for the best results, both with respect to the subjects now being taught and with respect to the introduction of new subjects made imperative by our rapidly expanding knowledge of agriculture and the rapidly increasing calls for highly trained men. Instructors are needed in English, physical education, zoölogy, chemistry, botany, landscape gardening and agronomy. In microbiology a trained teacher and investigator is needed immediately in order to give the courses already planned. For some years we have been endeavoring to establish a department of rural engineering. This important subject has received very little attention at our hands, wholly for lack of funds. The trustees agree that it is the duty of the college to bring to the attention of the people of the State more completely than we are now enabled to do the ways by which the college can render service to all those interested in agriculture and country life; provision should be made for a man to develop publicity work. There is also a necessity for some increase in salaries. It has not been the policy of the college to increase every instructor's salary every year, but we do desire to pay salaries commensurate with the services of well-trained and efficient teachers. There is no doubt but our men as a rule are underpaid in comparison with professors in some of the liberal-arts colleges, and in comparison with men doing similar work in western agricultural colleges.

*Repairs.*

Last year the trustees asked for an increase of \$30,000 in current annual appropriations to be divided equally in purchase of equipment and in repairs. The Legislature granted an increase of half that amount, and the trustees have decided to make that apply to equipment. The argument for a current annual appropriation for repairs still holds. In a plant inventoried approximately at \$600,000, an item of \$15,000 a year for general repairs is certainly not excessive. It is an annual charge that cannot be disregarded. It should be made a part of the annual appropriation.

*Statement concerning Requests for Special Appropriations.*

*An Agricultural Building.* — The main item which the trustees desire to press before the Legislature this winter as a special appropriation is one of \$210,000 for an agricultural building. I cannot do better than to quote from my report of a year ago concerning the need of this building: —

Although the college has been open to students nearly forty-five years, it has never had a building devoted specifically to agricultural teaching.

Practically every agricultural college in the country finds it necessary and desirable to make such a building one of the most important on the campus.

The rapid increase in our agricultural students has crowded the agricultural departments out of their old quarters. It is almost impossible to do efficient teaching under present conditions.

The winter short-course students are also inadequately provided for.

The proposed building will have three stories and a basement, and contain offices, classrooms, and laboratories for the departments of farm administration, agronomy, animal husbandry and agricultural engineering. It is proposed to erect a fireproof building and to equip it in harmony with the recent developments in these lines of work.

*General Improvements.* — The trustees ask for an appropriation of \$40,000 as a special fund for general improvements, including repairs that will be necessary during the summer of 1913 and prior to the time when the item for repairs in the current annual appropriation, which it is hoped the Legislature will make, can become available. A large proportion of the items which make up the total of \$40,000 have been placed in the legislative budget in former years, and, of course, the need for these improvements grows greater each year. The principal items comprise a general overhauling of south college, which is used partly as dormitory and partly as quarters for administrative departments; important extension of the water main; an addition to the young stock barn, absolutely necessary; the building of a piggery; important additions to the poultry plant; new walks; a greatly needed piece of macadam road; the construction of a much-needed bungalow for men employed regularly at the dairy barn and on the farm.

*The Questions of Land and of Sewers.* — There are several problems relative to the acquiring of land for horticultural and forestry

purposes that have not yet been settled by the trustees for lack of adequate data. It is possible, however, that decisions may be reached in time to present a resolve to the incoming Legislature for appropriations for these purposes. The last Legislature passed an act enabling the town of Amherst to construct an outlet for its sewerage system. The act permitted the co-operation of the college, with the condition that the college should share in the expense. At this time it is not known what this share will mean in the way of appropriation, so that no specific amount is named in this report.

*Other Needed Buildings.* — I dislike to call attention to the fact that the trustees have this year omitted from the legislative budget important buildings that have heretofore been asked for but not granted. This omission is due not to any feeling that the need has in any way lessened, but simply to the desire to press for the agricultural building. Among so many needs for classrooms and laboratories it is difficult to choose, but the wise thing seemed to be to make it clear to the Legislature and to the people of the State that our most pressing building need is the agricultural building. The other buildings on which the trustees have estimates, and which we feel should be built as soon as possible are: —

Student dormitory, . . . . .	\$30,000
Addition to French hall, . . . . .	35,000

#### **THE RELATION OF THE COLLEGE TO THE ORGANIZATION OF MASSACHUSETTS AGRICULTURE AND COUNTRY LIFE.**

In the president's report of one year ago there was a brief discussion of "the relationships of the college," in which mention was made of the need of co-operation with the public school system, agricultural schools, the normal schools, the State Board of Agriculture and voluntary associations. It is impossible to consider the work of the college on broad lines without constantly recurring to this question of relationships. Our work as a college is that of contributing to the solution of the rural problem in Massachusetts. There are other agencies and forces also contributing, each in its own way. There must, therefore, be a recognition of the need of working together, and consequently of understanding each other's work. There is a tendency to develop a multiplication of agencies, owing to the greatly renewed

interest in the affairs of country life. Massachusetts has been conservative in this respect, but in some parts of the country there is serious overlapping and duplication of effort. The matter has become so serious that it really takes on the guise of a national question. At a recent meeting of the Association of American Agricultural Colleges and Experiment Stations a resolution on this subject was introduced. After discussion it was referred to the executive committee of the association, with instructions to study the problem thus raised and to make the general question a prominent subject for discussion at the next annual meeting. The resolution was substantially as follows:—

*Whereas*, The various agencies for agricultural education in America are multiplying with great rapidity, and

*Whereas*, We believe that there is danger of serious loss of energy and increase of expense, on account of overlapping on the part of these agencies as they carry on their work; therefore

*Resolved*, That this association advocate the appointment of a National Commission on Agricultural Education (preferably a permanent commission), which shall be charged with the duty of inquiring into, and reporting upon, the organization and policy that, in the opinion of the commission, should prevail in the expenditure of public moneys provided for the United States Department of Agriculture, for State boards, or departments, of agriculture, for land-grant colleges, for secondary schools of agriculture, or for any other institution for agricultural research, teaching or extension, to the end that such funds may be applied in the most economical, efficient and worthy manner to the production of results of permanent value. It will be especially incumbent upon the commission to indicate and advise concerning the fundamental functions of these various institutions in the upbuilding of American agriculture and country life, and their relationships one to the other, so that there may be a minimum of overlapping, and, on the positive side, a constructive policy of definite co-operation. Such a commission might also well become the advisory board with respect to the use of private funds for these same purposes.

In connection with the discussion of this resolution it was suggested that each State should move toward the organization of a commission on agricultural education, or of some similar body, charged with the duty of ascertaining how the various agricultural forces in each State may be co-ordinated.

Because of the fact that this general subject of bringing together in some co-operative way the efforts of various agencies

and institutions interested in agriculture and country life has become a national question in the realm of agricultural college discussion; and inasmuch as in Massachusetts there are already evidences of a need of a clearer understanding of the situation; and also because this college cannot do its best work except by maintaining proper relationships to other organizations, I have thought it timely to discuss at some length the problem thus raised, under the title, "The Relation of the College to the Organization of Massachusetts Agriculture and Country Life."

### THE OUTLOOK FOR AGRICULTURE IN THIS STATE.

The outlook for the agricultural business in Massachusetts was never so promising as at the present day. An examination of the appended tables shows a really remarkable development in the agriculture of the State, in spite of the smaller acreage of improved land. It is true that values are influenced by the general rise of prices; nevertheless, farming is prosperous as compared with the situation thirty years ago, or even ten years ago.

These figures also mean a rapidly growing market, particularly for products grown not too far from the consumer. Prices rule high as compared with other parts of the country.

There is also a new interest in agriculture on the part of the farmers themselves, on the part of business men and on the part of residents of the cities. All these things give us courage to believe that we are at the beginning of a great revival of the agricultural industry in Massachusetts, and, indeed, in all New England.

#### *Agricultural Statistics of Massachusetts (United States Census).*

	1880.	1890.	1900.	1910.
Acreage of land in Massachusetts: —				
(a) Land in farms, . . . . .	3,359,079	2,998,282	3,147,064	2,875,941
(b) Improved land, . . . . .	2,128,311	1,657,024	1,292,132	1,164,501
(c) Unimproved land, . . . . .	1,230,768	1,341,258	1,854,932	1,711,440
Value of agricultural products, . . . . .	\$24,160,881	\$28,072,500	\$42,298,274	\$59,901,277
Value of product per acre of improved land, . . . . .	\$11 33	\$16 94	\$32 73	\$51 44
Rural population, . . . . .	866,071	736,890	919,541	1,103,248
The population of incorporated cities, . . . . .	917,014	1,579,234	1,809,644	2,263,168



### THE AGRICULTURAL ADVANTAGES WHICH MASSACHUSETTS OFFERS.

We may be compelled to admit that Massachusetts can hardly become one of the leading agricultural States quantitatively. As compared with Iowa and Illinois, for example, Massachusetts cannot hope to figure prominently in farm statistics, although its possibilities in value of agricultural products are far greater than many of us imagine. But there is every reason why Massachusetts can hope to become, and ought to become, a really great agricultural State qualitatively. It is a small State. It has a fairly compact area. It has many varieties of soil and differences of altitude. It has markets among the best in the world. It has great wealth, public spirit, abundant social machinery. It is a land beautiful to look upon. It possesses splendid traditions of education. It has been a leader in the industrial, political and social life of the nation, and it still retains a large measure of that leadership. Those who work its land are largely owners of the land, and at the present time most of them are the old New England stock. Its cities and larger villages are numerous, and, as a rule, they are connected with other places by trolley lines. There are few regions of the State that are necessarily isolated.

All these things comprise the natural resources and the foundation for an ideal agriculture and country life. We ought to make the best possible use of these splendid resources, not only for profit but for securing the highest type of rural life. If we aim to make "Bay State quality" a real asset in our farm production and in the development of rural communities that are here built up, we may soon take our stand proudly as a Commonwealth containing the best type of agriculture and country life in all the world. We are already doing much to justify the claim of high quality, but our desire should be nothing short of the highest. We need a great public ambition on behalf of Massachusetts agriculture and country life, a thoroughly progressive spirit on the part of the farmers, combined with a willingness to co-operate among themselves and with other people.

### PROGRESSIVE AGENCIES.

A catalogue of the efforts that are now being made to improve Massachusetts agriculture and country life shows that our people are not unmindful of their opportunities.

The State Board of Agriculture has supervision of 32 agricultural fairs to which it pays bounties. It held during the past year 138 farmers' institutes. It publishes an annual report, monthly crop reports, bulletins, nature leaflets and reports of other phases of its work. The work of the Dairy Bureau of the State Board of Agriculture consists in police work relative to the enforcement of dairy laws and educational work for the purpose of improving dairy products. The Board also is responsible for nursery inspection and apiary inspection, employs an ornithologist, and encourages agriculture directly by special exhibits, demonstrations and the distribution of bounties to incorporated poultry associations.

The State department of animal husbandry enforces laws relative to contagious diseases of domestic animals, and has also the power to secure proper hygienic conditions for such animals.

The forest service of the State carries on an elaborate forest-fire protection, develops reforestation, and has charge of the suppression of the gypsy and brown-tail moths. It promotes the perpetuation, the extension and the proper management of the forest lands of the Commonwealth, both public and private. On request it gives owners of forest land aid and advice in the management thereof.

The grange in Massachusetts has a membership of 32,000, with about 230 subordinate granges, in nearly as many towns of the State. It is growing and is reaching out to perform new tasks for the rural population.

The fruit and corn shows that are held from time to time are demonstrating the possibilities of both of these industries in Massachusetts, as well as illustrating better methods, and calling together people to observe what is actually being achieved.

Various chambers of commerce in the cities of the State are interesting themselves in the agricultural problems of the Commonwealth. The Boston Chamber of Commerce, the most powerful commercial body in New England, has a committee on agriculture. The Springfield Board of Trade has been notably active in cooperating with agricultural agencies. The Worcester Board of Trade has taken an interest in agricultural propaganda in that county.

The New England railways have established an industrial bureau, which interests itself in the development of agriculture as well as in that of manufacturing. Both the steam and electric railways have lent their aid in various educational enterprises on behalf of agriculture.

We have in Massachusetts a federation of churches organized on the broadest possible basis, officered by clear-visioned prophets of a better religious life. Special attention is being given to the country church, its needs and its possibilities of leadership in the building of a better rural Commonwealth.

The Massachusetts State Library Association, although existing in a State that has more public libraries than probably any other State in the Union, nevertheless has constructive plans for a wider distribution of books in the more sparsely settled communities.

The State Board of Education is carrying on a comprehensive campaign on behalf of a thoroughgoing system of agricultural education of high school grade.

Agricultural newspapers have a wide circulation in Massachusetts and are full of optimism with respect to the future of Massachusetts and country life.

The Young Men's Christian Association has an active rural work.

The Massachusetts Experiment Station is rendering a great service in various lines of control work in the testing of commercial fertilizers, of stock foods, and of dairy-testing apparatus. The experiment station also, as an organ of research, has been for years carrying on fundamental investigations with respect to the best use of Massachusetts soils and the best crops to grow on these soils.

The Massachusetts Agricultural College has over 500 students of college grade, preparing for leadership in the various agricultural vocations. It also has each year nearly 300 students taking shorter courses in agriculture.

The Extension Service of the Agricultural College is giving correspondence courses to several hundred regular readers, lecture courses and demonstrations in various parts of the State, local and State conferences for rural community development, extension schools of agriculture, educational trains, educational ex-

hibits and demonstrations at fairs, demonstration orchards, and it is organizing dairy and agricultural improvement associations, making agricultural surveys, organizing girls' and boys' agricultural clubs, and answering tens of thousands of letters each year.

This mere cataloguing of enterprises carried on in this Commonwealth on behalf of agriculture and country life shows the enormous amount of time and energy and money which is being expended to-day, and being expended in faith of a harvest of better crops, of greater profits and of a sweeter, finer individual and community life in the rural towns of the State.

#### SOME DANGERS IN THE SITUATION.

All this activity is good. It indicates that Massachusetts has developed the machinery by which agricultural progress may be forwarded. But there are dangers in this very fact of multiplication of effort. May I suggest two or three that seem to lie on the surface?

1. The danger of *duplication*. The more aggressive an organization or institution, the greater the danger of doing work that is being attempted, or should be attempted, by some other organization or agency. Thus money may be wasted.

2. The danger of *working at cross purposes*. There is likelihood that different ends may be pursued by the different institutions, that various agencies may plow the same field at different angles, thus nullifying the work of one another.

3. The danger of *omission*. Important things may be left undone. Institutions as well as individuals are inclined to want to do the things that are suggested by what somebody else has done.

In other words, the danger of overlapping of these various efforts may become serious and may work against the best development of our agriculture and country life.

#### THE ADVANTAGES OF A COMPREHENSIVE PLAN FOR ADVANCING AGRICULTURE AND COUNTRY LIFE.

The considerations just mentioned are in my judgment sufficient to raise the question whether we should not at once take steps to prevent duplication and overlapping. In other words, may we not, through the development of a comprehensive plan

for the upbuilding of agriculture and country life in the whole Commonwealth, not only avoid overlapping of effort, but may we not also, by setting forth an ideal, thereby advance in manifold ways and by many years the realization of our watchword, "Bay State quality"? Some of the advantages of such a comprehensive plan seem to be fairly obvious, as, for example:—

1. It would tend to prevent duplication of work and save unnecessary time and money.
2. It would give a working ideal toward which every one could strive.
3. It would assist in getting the large and important things done.
4. It would aid in securing the co-operation of all the agencies, institutions and individuals that are interested in a better agriculture and country life.

#### AN IDEAL PROGRAM FOR MASSACHUSETTS AGRICULTURE AND COUNTRY LIFE.

I am perfectly aware that an attempt to state an ideal program for such a large movement as the development of the agriculture and country life of a State might bring upon us the criticism of practical men as well as the criticism of the theorists. Practical men are sometimes inclined to scoff at a plan that seems to be visionary, and that involves a long period for its realization, even in part. The theorists will never agree on a program. Nevertheless, I venture to suggest such a program, largely for the purpose of indicating the value of a definite plan of some sort as a basis for a comprehensive organization of agriculture and country life. We must look at the problem in the largest possible way. So far as practicable we must look at the problem as a unit, — the rural problem in Massachusetts. I suggest, therefore, the following ideal program:—

In general, we need —

1. To create enthusiasm for an enlarged Massachusetts agriculture; for an enriched Massachusetts country life.
2. To encourage every needed association and institution which is working for rural betterment and agricultural advancement in Massachusetts, and to assist each to gain definiteness, directness and efficiency for its particular task.

3. To secure the co-operation of all the agricultural interests of Massachusetts on behalf of a concerted plan for a better agriculture and country life in every rural town of the State.

4. To gain for this co-operative movement among agricultural agencies the active support of the commercial and industrial interests of Massachusetts.

5. To develop adequate publicity for Massachusetts agricultural possibilities.

6. To educate consumers as to Massachusetts-grown products of the soil, — their quality, value, and use; and in other ways to extend the market for Massachusetts agricultural products.

In particular, we need —

1. To secure an adequate inventory of Massachusetts agricultural resources.

2. To devise and carry out educational campaigns for the most efficient agricultural practice and farm management, — for the best use of every acre of Massachusetts soil, while conserving soil resources.

3. To improve the methods of marketing farm products, in order that all consumers may have a wider range of choice Massachusetts-grown products at a fair price, and that the producers may have a reasonable profit for intelligent labor.

4. To secure legislation that shall protect both producers and consumers, with justice to both, and that shall stimulate and encourage the agricultural workers.

5. To secure better highways and other means of communication in the rural regions of Massachusetts.

6. To improve the rural schools, and to build a comprehensive public system of agricultural education both for youth and for adults.

7. To conserve and develop the beauty of rural Massachusetts.

8. To increase the means of wholesome recreation for young and old in the rural communities of Massachusetts.

9. To encourage the church and its allies to renewed labor and more efficient service in all rural towns.

10. To encourage every wise endeavor for the preservation of the Massachusetts rural home, the lightening of its labors, and the widening of its influence in the community as well as upon the lives of its members.

Some such general, or ideal, platform is needed in order to give scope and breadth to the attempt to organize the rural interests of the Commonwealth. But we also need —

A WORKING PROGRAM OF LARGE RURAL ENTERPRISES NEEDING  
IMMEDIATE ATTENTION.

1. *Secure the Best Use of Present Cultivated Areas.* — This implies a series of well-developed educational campaigns for stimulating farmers to follow the most approved methods. An example at hand is the attempt to secure the general use of high-grade seed-corn. Our ambition should be to make every cultivated acre in Massachusetts yield the largest possible profit.

2. *Develop the Waste and Unimproved Areas.* — There are tens of thousands of acres of waste lands, both along the coast and in river valleys, that are at present unavailable for agricultural purposes, but that when once drained might become the richest of our soils. The development of these lands must be preceded by a scientific study of their availability and a comprehensive plan for their drainage and use. Much of the land now listed as unimproved undoubtedly has uses if we could but find them.

3. *Help the Farmers to secure an Adequate Farm Labor Supply.* — This is one of the most difficult and perhaps the most important of our agricultural problems in Massachusetts. Its importance, however, rather than its difficulty should be the warrant for making it the subject of careful study and for devising methods for meeting the conditions that exist.

4. *Establish a Better System of Rural Credit.* — We are not yet sufficiently in possession of facts to be able to say just to what degree our Massachusetts farmers are lacking in facilities for securing both permanent and working capital. It is safe to say, however, that the time is soon coming, if it has not already arrived, when the need for better credit facilities will be a pressing need among our smaller landowners.

5. *Devise a More Efficient System of Marketing.* — The discrepancy between the prices paid by the consumer of farm products and the prices paid to the producer is a subject of constant comment and dissatisfaction to both parties concerned. We should attempt to organize, as soon as practicable, a system of

distribution of agricultural products which will secure prices less fluctuating than now, and such that the farmer may receive a fair profit. In other words, the wastes and excessive costs of the present system of distribution must be minimized.

6. *Perfect the System of Agricultural Education.* — A complete system of agricultural education will include the teaching of agriculture not only to college students, but also to boys and girls of high school age and to adults and young people who are not attending school. Massachusetts is well on the way toward a well-developed system. However, we must see to it that this system is based on sound principles, and that its parts work together in complete harmony.

7. *Get and keep the Right Kind of People on the Land.* — It is difficult to influence in any marked way, by agitation or by legislation, or even by education, the currents of human migration as they flow from the country to the city, or from the city to the country, or from one nation to another. But it is clear that in New England we face a very serious question with respect to the maintenance of the quality of people living on and working the New England soil. It is often claimed that this quality has appreciably deteriorated in the last century. However that may be, we know perfectly well that in many parts of New England the land is being occupied by people of different ideals and standards of living than we have been accustomed to. The question is, can we insure a high quality of immigration to our lands, either from the city or from other countries or from the west; and once these people are on the land can we insure a scheme of education that shall rapidly bring them into sympathy with, and understanding of, our best American life? Certainly we should not decline to exercise every effort to maintain the sort of rural population that we desire.

#### COMPLETE ORGANIZATION OF AGRICULTURE AND COUNTRY LIFE.

It is my firm conviction that we need a complete organization of agriculture and country life in order to bring about such desirable advancements as have been described. We must secure a measurable degree of co-operation among all the factors that make for better conditions. It is perfectly true that we *can* work in piecemeal fashion, but that is not the spirit of the age and it is



not the best method. Neither the State nor any group of individuals nor any organization can dictate the methods of progress or the way in which co-operation may be secured. But we can secure such an organization of all the agricultural and country life interests in the Commonwealth that they shall work together intelligently and sympathetically on behalf of the larger interests of our rural people, and thus on behalf of the welfare of the entire Commonwealth.

#### THE METHOD OF ORGANIZATION.

In considering a method by which this large and complete organization of agriculture and rural life interests in Massachusetts may be achieved, the main reliance must be placed on the idea of *federation* of interests. We do not need a new organization. We simply need a getting together of existing organizations and agencies. In other words, the federal, or representative, idea is the key to the situation.

#### A PLEA FOR A MASSACHUSETTS FEDERATION FOR RURAL PROGRESS.

Therefore I would recommend that the trustees authorize a call, as soon as such a step seems wise — perhaps next autumn — to the representatives of all the various interests that have been catalogued, and such others as are interested, for the purpose of discovering whether the time is not ripe for a definite federation of these interests on behalf of an enthusiastic, clear-cut, well-planned, persistent effort to bring Massachusetts agriculture and country life to its highest possible development. This movement is already under way in some of the towns of the State and, indeed, in the State as a whole, but it needs organizing.

We cannot of course state the exact form that such a movement may take. A number of towns in the State have already appointed town committees or developed town federations for rural improvement. Clearly, we must have each town seeking to make the best use of its resources before we can have the State as a whole making the best use of its resources. The heart of the movement is the attempt of each town to study its own resources and its needs, and to map out a plan for bettering conditions in the town. It has already been suggested that these town rural

life "committees" (or "councils" or "federations") co-operate in a county organization of a similar type; and, finally, that representatives of these county organizations unite with the representatives of the various State-wide organizations and agencies in a Massachusetts federation for rural progress.

#### THE RELATION OF THE STATE TO THE CAMPAIGN FOR RURAL PROGRESS.

It is obvious, also, that the State of Massachusetts itself, not only through legislation but through various institutions and agencies supported out of the State treasury, can and must continue to render a great service in this renewed effort to secure the best quality of agriculture and country life for the Commonwealth. This is one of the most significant aspects of our attempt to bring about a thorough organization of Massachusetts agriculture and country life. The State cannot achieve all that needs to be done working apart from private individuals and voluntary organizations, but it can and should play a vital part in the general plan.

#### WHAT THE STATE SHOULD DO.

The State should —

1. Gather facts.
2. Protect.
3. Stimulate.
4. Develop.
5. Educate.
6. Provide a clearing-house for agricultural and rural life interests.

1. *The State should gather Facts.* — We need to know our agricultural resources and possibilities. We need to know existing agricultural methods. We need to know the tendencies and needs of the markets both at home and abroad.

There are two classes of facts that need gathering. The first class comprises a census of those facts that have a bearing upon the agricultural business and method. They should be gathered every year. They have to do with production, with prices, with miscellaneous agricultural statistics. The other class may be designated more completely by the word "investigation." There must be a constant study of fundamental problems of the soil and

of plant and animal growth, as well as a study of those economic and social conditions that have so much influence in the farmer's work and life.

2. *The State should protect.* — It should protect the farmers against diseases and pests, against fraud and injustice. It should protect the better and honest farmers against the inferior and dishonest farmers. This protection will be secured through proper legislation enforced by appropriate executive boards or commissions.

3. *The State should stimulate.* — It should to some degree offer prizes. It should have general supervision of the agricultural-fair system. It should advertise the agricultural advantages of the State to its own people, to the people of other parts of the land, and to the people of those foreign countries that are able to contribute a stalwart and acceptable rural population to our Massachusetts farms.

4. *The State should develop.* — Without question full sweep should be given to individual initiative. At the same time, there are problems to solve so complicated, so difficult, so far-reaching that it will be almost impossible to work them out unless the State in some way lends direct aid. For example, to recur to a matter already mentioned, we have in Massachusetts tens of thousands of acres of waste land. Some of these lands are near tidewater. They can be drained only under some large scheme. Other thousands of acres of these lands are in the valleys and along streams, perhaps overflowed by waters that were once useful for manufacturing purposes, but that are no longer useful. Other thousands of acres are rough land; some of them available only for forestry purposes, but a very large proportion of them capable of development for prosperous sheep-growing or orcharding. It is only through some form of State aid and leadership that these waste lands can be developed. They are an unworked asset. They ought to be developed as soon as possible, on some comprehensive plan. They should, first of all, be surveyed and their possibilities understood.

So, also, in the development of adequate credit facilities and market facilities, the State should render necessary assistance, even though the actual business organization is co-operative among individuals or organizations.

The State can continue to assist prospective purchasers of farms in locating those farms and in furnishing information concerning the best uses to which those farms can be put.

The State can assist in securing an adequate labor supply by acting as a clearing-house for labor engagements and, what is more important, by securing from foreign countries or from the cities an adequate number of skilled laborers. The same thing is true to a large degree in the development of an adequate system of marketing of farm products.

If all Massachusetts acres are to be tilled to their full capacity, it means a larger rural population. There is a tide setting in from the city toward the country, and undoubtedly during the next ten years a great many people will come out from the cities to take farm lands and work them permanently. There is undoubtedly a considerable number of farmers in the middle west — many of them of New England descent — who for one reason or another would like to get back to New England. Some of them like the New England life; some wish to engage in certain specialties that can be developed in the east better than in the west; some would like to sell their relatively high-priced lands and buy the cheaper lands of New England. The State, through an organized effort, could encourage these people to locate advantageously in Massachusetts. It is also a matter of concern as to the type of immigrant that comes from foreign shores to settle our lands, whether he has the capacity to develop in modern agriculture, and whether he will assimilate with our American institutions. The State should see to it that efforts are made to get the right sort of people on the land.

5. *The State should educate for Agriculture.* — It should have a comprehensive system of investigation, of teaching and of extension service at the agricultural college. It should have a well-developed system of agricultural departments in our high schools and in the special agricultural high schools. So far as consistent with good educational principles, agriculture should be brought to the attention of pupils in the upper grades of the public schools.

6. To some degree, at least, *the State should provide a clearing-house for the organization of agriculture and country life.* In other words, the State itself should co-operate most intimately and cordially with a State federation for rural progress in the development of a comprehensive campaign for a better agriculture and rural life.

THE PRINCIPLES UNDER WHICH THE STATE SHOULD MAKE ITS  
CONTRIBUTION TO THE ORGANIZATION OF AGRICULTURE AND  
COUNTRY LIFE.

If the State is to participate, as it should, in this effort to bring agriculture and country life in Massachusetts to its highest levels, there are a few fundamental principles that must be invoked.

1. *The Principle of Local Initiative.* — There should be a maximum of effort on the part of individuals and voluntary organizations. It is not the business of the State to do either for individuals or for towns what they can do for themselves. The State, therefore, should encourage individual and community initiative and discourage individual and community dependence upon outside agencies.

2. *The Principle of Co-operation.* — This principle is recognized in all our business and social life and cannot be disregarded however much we may cherish the old individualism of the past. As a matter of fact, there is little danger that this individualism, in New England at least, is likely to be crowded out. We need, rather, to encourage the spirit of working together. This principle of co-operation also means an institutional division of labor, that is, making sure that the different organizations and agencies do their own particular kinds of work, and then that all co-operate for the one large, common end.

3. *The Principle of Federation.* — It is desirable to centralize our efforts, but not to centralize authority or power. Consequently, the federal principle forms the best method for securing co-operation of individuals and institutions.

THE MAIN AGENCIES OF STATE AID FOR AGRICULTURE.

There are two main agencies by which the State can develop its proper relationship to the organization of agriculture and country life. The first is the State Board of Agriculture; the second is the Agricultural College. This statement is not meant to convey the idea that these are the only agencies by which the State can develop its activities on behalf of agriculture and country life, but in these two center the main lines of effort in which the State should participate. They are characteristic, specialized agencies of the State. Among those miscellaneous agencies,

whose function is not, however, specifically rural, are the State Board of Education, the State Board of Health, the Railway Commission, the Highway Commission, etc. All of these boards have functions that bring them into close touch with the development of a better country life. But their prime function is connected with the people as a whole and not with the rural problem specifically. They must be considered in any attempt to relate the State to a campaign for rural progress.

It would be unwise to prolong this discussion by treating exhaustively all the respective functions of these two main agencies, but it is absolutely necessary to outline in a terse way the special tasks that I believe should be developed by them. It must be remembered that these tasks will, in some degree, overlap, and that the co-operative spirit and method must be constantly used as the work is developed.

#### THE FUNCTION OF THE BOARD OF AGRICULTURE.

The function of a well-organized board of agriculture in an American State is not primarily educational but administrative. Among the various types of work which should be fostered and controlled by such a board are the following:—

1. The gathering of current statistical facts, especially concerning business tendencies and needs.
2. The administration of laws designed to protect the farmers.
3. The administration of those enterprises designed to stimulate and foster agriculture.
4. The administration of those efforts that have to do with the development of agriculture, in so far as the State wishes to participate in such efforts.

In these matters the board of agriculture should take the initiative. The college may help at many points.

#### THE FUNCTION OF THE AGRICULTURAL COLLEGE.

The American agricultural college has as its mission education and not administration. This education divides itself very naturally into three main lines of effort.

1. Investigation, which includes not only the study of the laws of nature with respect to the soil and the growth of plants and

animals, but also an investigation of actual conditions — physical, economic, social — under which farmers work and live.

2. The education of men and women who shall be rural-problem solvers. This is accomplished through regular and special courses offered at the institution.

3. The educational function also embraces the extension service, which attempts to reach those who cannot come to the college, with the best of information concerning all phases of the rural problem.

The college, also through its extension service, should serve as a clearing-house for the general movement to organize agriculture and country life in the Commonwealth. It should co-operate heartily with the federation for rural progress, and should be in close touch with the varied efforts of the board of agriculture.

In all these matters the college should take the initiative, although at many points the board of agriculture may assist.

#### THE FUNCTION OF LOCAL GOVERNMENT.

In all this work there might well be a larger participation of local government, both of counties and towns, on behalf of a better agriculture and country life. We do not yet know by what means this larger participation may be developed, but I believe that we must rely more fully than we have ever done before on the local civic groups for practical assistance in working out our country life problems.

#### THE NEXT STEP.

It is obvious that the main ideas here advanced can be realized only by some definite co-operative action on the part of the institutions and organizations most intimately connected with the development of Massachusetts agriculture and country life. It is of first importance to determine the scope of State aid to agriculture, the function of the board of agriculture, of the Agricultural College, and of other State agencies in this scheme of State aid, and the relationship of these one to another and to all of the voluntary organizations and enterprises interested.

A COMMISSION ON AGRICULTURAL EDUCATION AND ORGANIZATION.

I therefore believe the time has come for the organization of a commission to study and report on the question of the relationship of the State to rural development in Massachusetts. I suggest a commission of seven appointed as follows: one by the State Board of Agriculture; one by the executive committee of the State grange; one by the Board of Trustees of the Massachusetts Agricultural College; one by the State Board of Education; and three by the Governor. One of those appointed by the Governor should be a practical farmer, and one should be an attorney of recognized standing.

The appointment should be for a period ending on the presentation of the report of the commission at a date not later than Jan. 1, 1915.

The members of the commission should serve without pay, but necessary expenses should be paid, and authority should be granted, under the approval of the Governor and Council, to travel in other States and, if necessary, to send member or agent delegate to Europe for the purpose of learning what is being done in other States and countries. The commission should be authorized to employ a secretary at a salary not to exceed \$150 a month, should be given sufficient clerical help and should be required to present a report not later than Jan. 1, 1915. There should be an appropriation ample to carry on the work of the commission.

The special duties of the commission should be as follows:—

1. To collect all the laws of the Commonwealth bearing on agriculture and country life, and to recommend a code or group of acts designed to cover the present needs of the Commonwealth, in so far as legislation may be considered effective and desirable in the proper control and development of the agricultural industries and rural affairs in the State.

2. To report on the best methods of aiding agriculture, and the best form of organization for such State boards and institutions as are needed.

3. To present a statement relative to the best methods of co-ordinating the activities of the various agencies in the Common-



wealth, both public and private, which are designed to benefit agriculture and country life, and the relation of the Commonwealth thereto.

If this suggestion for a commission appointed by the Legislature seems too formidable, or is considered impracticable at the present time, it is possible that progress could be made if some one of the institutions interested should take the initiative in calling together a voluntary conference to be made up of a representative or representatives of several of the agencies interested, for the purpose of discussing the questions raised in this report.<sup>1</sup>

Respectfully submitted,

KENYON L. BUTTERFIELD,

*President.*

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<sup>1</sup> The above report was accepted by the trustees of the college, and a vote passed to the effect that the trustees favor the idea of a conference of representatives of State and other agencies interested in agriculture and country life, and that they recommend that each of the following organizations appoint a representative or representatives to such a conference for the purpose of conferring on the suggestions contained in the report: The State Board of Agriculture, The State Board of Education, The Massachusetts State Grange, The Massachusetts Society for the Promotion of Agriculture, The Boston Chamber of Commerce, The Massachusetts Agricultural College.

At the annual meeting of the State Board of Agriculture, held Jan. 7 and 8, 1913, it was voted to join in the suggestion made in the above report, and the secretary of the board of agriculture was authorized to invite the above-named organizations to elect representatives to the conference.

## STATISTICS OF THE COLLEGE.

TABLE I. — Attendance.

	Registration Nov. 30, 1911.	Registration Nov. 30, 1912.
Senior class, . . . . .	85	91
Junior class, . . . . .	97	102
Sophomore class, . . . . .	127	125
Freshman class, . . . . .	168	184
	<u>477</u>	<u>502</u>
Graduate students, . . . . .	15	22
Unclassified students, . . . . .	29	31
Total doing work of college grade, . . . . .	<u>521</u>	<u>555</u>
Short courses:—		
Winter school, . . . . .	113	131
Poultry course, . . . . .	74	80
Apple-packing school, . . . . .	—	40
Beekeepers' course, . . . . .	16	10
Summer school, . . . . .	153	—
	<u>356</u>	<u>261</u>
Total, . . . . .	<u>877</u>	<u>816</u>

TABLE II. — Legislative Budget, 1912.

ITEMS.	Amount asked.	Amount granted.
1. Special appropriations:—		
Agricultural laboratory and equipment, . . . . .	\$200,000 00	—
Student dormitory, . . . . .	25,000 00	—
Addition to French Hall, . . . . .	25,000 00	—
Addition to Draper Hall, . . . . .	25,000 00	\$25,000 00
Dwelling for registrar, . . . . .	8,000 00	—
Tenement house for farm help, . . . . .	6,000 00	—
Sewers, . . . . .	10,000 00	10,000 00
Department equipment, . . . . .	31,525 00	20,000 00
Repairs and minor improvements, . . . . .	20,760 00	15,000 00
General improvements, . . . . .	35,135 00	10,000 00
	<u>\$386,420 00</u>	<u>\$80,000 00</u>
2. Increase in current annual appropriations:—		
Administration, . . . . .	\$5,000 00	\$5,000 00
Maintenance and equipment, . . . . .	37,000 00	22,000 00
Investigation, . . . . .	14,000 00	4,500 00
Instruction, . . . . .	23,000 00	15,000 00
Short courses and extension, . . . . .	30,000 00	30,000 00
	<u>\$109,000 00</u>	<u>\$76,500 00</u>
Previous appropriation, . . . . .	173,500 00	173,500 00
Total, . . . . .	<u>\$282,500 00</u>	<u>\$250,000 00</u>

TABLE III. — *Statistics of the Extension Service for 1912.**Extension Service conducted at the College.*

Farmers' week, . . . . .	1,040
Polish farmers' day, . . . . .	57
Conference for rural community leaders, . . . . .	184
Correspondence courses:—	
Present enrollment, . . . . .	578
Courses completed or work dropped during year, . . . . .	175
Number of people reached through short courses and correspondence courses, . . . . .	2,034

*Extension Service conducted away from the College.*

Lectures: <sup>1</sup> —	
Number given in 1912, . . . . .	591
Approximate attendance, . . . . .	27,469
Fairs:—	
No exhibits made, but members of the faculty acted as judges and gave lectures at 16 fairs throughout the State. No attendance was taken.	
Demonstration orchards:—	
Requests on file, . . . . .	34
New orchards planted, . . . . .	2
Renovation plots, . . . . .	1
Boys' and girls' corn and potato clubs:—	
Number of clubs, . . . . .	127
Number enrolled, . . . . .	13,462
Massachusetts Agricultural College Agricultural Improvement Association:—	
Membership, . . . . .	137
Dairy Improvement Association:—	
Number organized, . . . . .	3
Number of members, . . . . .	55
Extension schools:—	
Requests for schools, . . . . .	16
Schools given, . . . . .	5
Membership, . . . . .	351
Enrollment, . . . . .	500
Judging contests, . . . . .	13
Enrollment, . . . . .	111
Traveling libraries:—	
Public libraries receiving books, . . . . .	36
High schools, . . . . .	1
Volumes sent out, . . . . .	629
Bulletins, pamphlets, etc., . . . . .	252
Average size of shipment, . . . . .	24
Farm visits:—	
Visits made, . . . . .	66
Student extension work:—	
Evening schools held, . . . . .	4
Teachers, . . . . .	9
Average attendance each week, . . . . .	80
Mailing list:—	
Facts for farmers, . . . . .	1,553
Short courses, . . . . .	3,764
Total number of people reached, . . . . .	49,231

These numbers do not include the attendance of the various meetings held at the college by organizations throughout the State.

TABLE IV. — *Public Speakers for the Year.*A. *Speakers at Sunday Chapel for Year ending Nov. 30, 1912.*

1911.

Dec. 10. — Dr. Samuel A. Eliot, Boston.

1912.

Jan. 7. — Mr. Robert E. Speer, New York City.

Jan. 14. — Rev. J. S. Lyon, Holyoke.

Jan. 21. — Mr. Henry Bond, Brattleboro, Vt.

<sup>1</sup> This is not accurate, as many lectures are not reported.

## 1912.

- Jan. 28. — Rev. F. Boyd Edwards, Orange, N. J.  
 Feb. 11. — Dr. Albert P. Fitch, Cambridge.  
 Feb. 18. — Dr. Herbert J. White, Hartford, Conn.  
 Feb. 25. — Mr. W. R. Moody, Northfield.  
 Mar. 3. — Rev. J. W. Campbell, Newtonville.  
 Mar. 10. — Rev. Lee W. Beattie, New York City.  
 Mar. 17. — Mr. Ray Stannard Baker, Amherst.  
 Mar. 24. — Mr. Herbert S. Carruth, Amherst.  
 Apr. 14. — Rev. Robert A. Ashworth, Milwaukee, Wis.  
 Apr. 21. — Col. E. W. Halford, New York City.  
 May 5. — Mr. Jacob Riis, New York City.  
 Nov. 3. — Rev. Clarence F. Swift, Fall River.  
 Nov. 10. — Bishop Thomas F. Davies, Springfield.  
 Nov. 17. — Mr. Alfred H. Evans, Northampton.  
 Nov. 24. — Rev. Paul Van Dyke, Princeton, N. J.

*B. Speakers at Wednesday Assemblies for Year ending Nov. 30, 1912.*

## 1911.

- Dec. 13. — Mr. John Nolen, Cambridge.

## 1912.

- Jan. 10. — Prof. William D. Hurd, Massachusetts Agricultural College.  
 Jan. 17. — Dr. J. H. McCurdy, Springfield.  
 Jan. 24. — Rev. George M. Rowland, Auburndale.  
 Feb. 7. — President Kenyon L. Butterfield, Massachusetts Agricultural College.  
 Feb. 14. — Miss Ida M. Tarbell, New York City.  
 Feb. 21. — Mr. Henry Sterling, Boston.  
 Feb. 28. — Mr. W. M. Danner, Boston.  
 Mar. 13. — Pres. Harry A. Garfield, Williams College.  
 Mar. 20. — Mr. J. W. Pincus, New York City.  
 Mar. 27. — Mr. William Jessup Sholar, Boston.  
 Apr. 10. — Hon. Michael J. Murray, Boston.  
 Apr. 17. — Prof. Edgar L. Ashley, Massachusetts Agricultural College.  
 Apr. 24. — Pres. Frederick W. Hamilton, Tufts College.  
 May 1. — Mr. J. G. Phelps Stokes, New York City.  
 May 8. — Pres. Kenyon L. Butterfield, Massachusetts Agricultural College.  
 May 15. — Rev. A. Z. Conrad, Boston.  
 June 5. — Pres. Kenyon L. Butterfield, Massachusetts Agricultural College.  
 Sept. 18. — Pres. Kenyon L. Butterfield, Massachusetts Agricultural College.  
 Sept. 25. — Hon. James Logan, Worcester.  
 Oct. 9. — Associate Dean Edward M. Lewis, Massachusetts Agricultural College.

1912.

Oct. 23. — Prof. Charles E. Marshall, Massachusetts Agricultural College.

Nov. 6. — Hon. James J. Storrow, Boston.

Nov. 13. — Prof. Robert J. Sprague, Massachusetts Agricultural College.

Nov. 20. — Mr. William Chauncy Langdon, New York City.

TABLE V. — *Statistics of Freshmen entering Massachusetts Agricultural College, September, 1912.*

A. *Home Addresses of Students (classified by Towns and Cities).*

Acushnet, . . . . .	1	Hopedale, . . . . .	1	Quincy, . . . . .	1
Adams, . . . . .	2	Jamaica Plain, . . . . .	2	Rockville, . . . . .	1
Amherst, . . . . .	4	Jefferson, . . . . .	1	Rosindale, . . . . .	1
Apauo, N. J., . . . . .	1	Kingston, . . . . .	1	Roxbury, . . . . .	1
Arlington, . . . . .	1	Lawrence, . . . . .	5	Roxbury Station, Conn., . . . . .	1
Ashfield, . . . . .	1	Leominster, . . . . .	3	Royalston, . . . . .	1
Auburndale, . . . . .	1	Longmeadow, . . . . .	1	Rowe, . . . . .	1
Beverly, . . . . .	1	Lowell, . . . . .	2	Saxonville, . . . . .	1
Boston, . . . . .	5	Lynn, . . . . .	1	Sayville, L. I., N. Y., . . . . .	1
Bridgewater, . . . . .	1	Malden, . . . . .	4	Seymour, Conn., . . . . .	1
Brockton, . . . . .	1	Manchester, . . . . .	1	Shelburne Falls, . . . . .	1
Brookline, . . . . .	1	Mansfield, . . . . .	1	Somerset, . . . . .	1
Brooklyn, N. Y., . . . . .	3	Marlborough, . . . . .	1	Somerville, . . . . .	4
Canton, . . . . .	1	Mattapan, . . . . .	1	Southborough, . . . . .	1
Centreville, R. I., . . . . .	1	Melrose, . . . . .	4	South Duxbury, . . . . .	1
Clinton, . . . . .	1	Melrose Highlands, . . . . .	3	South Hadley, . . . . .	1
Concord, . . . . .	1	Mendon, . . . . .	1	South Hadley Falls, . . . . .	1
Cranford, N. J., . . . . .	1	Merrick, . . . . .	1	South Harwich, . . . . .	1
Dalton, . . . . .	2	Merrimac, . . . . .	1	South Natick, . . . . .	1
Dalton, Pa., . . . . .	1	Milford, . . . . .	1	South Weymouth, . . . . .	1
Dedham, . . . . .	2	Millbury, . . . . .	1	Springfield, . . . . .	3
Deerfield, . . . . .	1	Millers Falls, . . . . .	1	Stockbridge, . . . . .	1
Dorchester, . . . . .	3	Millis, . . . . .	1	Stoughton, . . . . .	1
Doylstown, Pa., . . . . .	1	Montague, . . . . .	2	Sunderland, . . . . .	2
East Dover, Vt., . . . . .	1	Mount Vernon, N. Y., . . . . .	1	Taunton, . . . . .	1
Easthampton, . . . . .	1	Natick, . . . . .	2	Ticonderoga, N. Y., . . . . .	1
Exeter, N. H., . . . . .	1	Newbury, Vt., . . . . .	1	Turners Falls, . . . . .	3
Fall River, . . . . .	1	Newtown, Conn., . . . . .	1	Vineyard Haven, . . . . .	1
Fitchburg, . . . . .	1	North Abington, . . . . .	1	Waitsfield, Vt., . . . . .	1
Flemington, N. J., . . . . .	1	North Adams, . . . . .	1	Waltham, . . . . .	2
Florida, N. Y., . . . . .	1	North Amherst, . . . . .	3	Warren, . . . . .	1
Forest Hills, . . . . .	1	Northampton, . . . . .	1	Westford, . . . . .	2
Foxcroft, Me., . . . . .	1	Northborough, . . . . .	1	Westminster, . . . . .	1
Framingham, . . . . .	3	North Brookfield, . . . . .	1	West Springfield, . . . . .	2
Georgetown, . . . . .	1	Northfield, . . . . .	1	Williamsburg, . . . . .	1
Great Barrington, . . . . .	1	North Middleborough, . . . . .	1	Wilton, Conn., . . . . .	1
Groton, . . . . .	1	Orange, . . . . .	1	Windsor, Conn., . . . . .	1
Groveland, . . . . .	1	Pawtucket, R. I., . . . . .	1	Winter Hill, . . . . .	1
Hadley, . . . . .	2	Philadelphia, Pa., . . . . .	1	Winthrop, . . . . .	2
Harvard, . . . . .	1	Phoenix Mills, N. Y., . . . . .	1	Worcester, . . . . .	7
Haverhill, . . . . .	3	Pittsfield, . . . . .	2		
Hingham, . . . . .	2	Plymouth, . . . . .	2		

B. *Home Addresses (classified by States).*

	Number.	Per Cent.		Number.	Per Cent.
Connecticut, . . . . .	5	2.72	Pennsylvania, . . . . .	3	1.63
Maine, . . . . .	1	.54	Rhode Island, . . . . .	2	1.09
Massachusetts, . . . . .	158	85.87	Vermont, . . . . .	3	1.63
New Hampshire, . . . . .	1	.54			
New Jersey, . . . . .	3	1.63		184	100.00
New York, . . . . .	8	4.35			

*C. Home Addresses (classified by Counties of Massachusetts).*

	Number.	Per Cent.		Number.	Per Cent.
Barnstable, . . . . .	1	.63	Middlesex, . . . . .	34	21.52
Berkshire, . . . . .	9	5.70	Nantucket, . . . . .	-	-
Bristol, . . . . .	5	3.16	Norfolk, . . . . .	9	5.70
Dukes, . . . . .	1	.63	Plymouth, . . . . .	10	6.33
Essex, . . . . .	16	10.13	Suffolk, . . . . .	16	10.13
Franklin, . . . . .	14	8.86	Worcester, . . . . .	23	14.55
Hampden, . . . . .	6	3.80			
Hampshire, . . . . .	14	8.86		158	100.00

*D. Nativity of Parents.*

	Number.	Per Cent.
Neither parent foreign born, . . . . .	139	75.55
Both parents foreign born, . . . . .	32	17.39
Father (only) foreign born, . . . . .	7	3.80
Mother (only) foreign born, . . . . .	6	3.26
	184	100.00

*E. Education of Father.*

	Number.	Per Cent.
Common school, . . . . .	83	45.11
High school, . . . . .	56	30.43
Business school, . . . . .	19	10.33
College or university, . . . . .	20	10.87
No statistics, . . . . .	6	3.26
	184	100.00

*F. Religious Census.*

	MEMBERSHIP.		PREFERENCE.		TOTALS.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
Baptist, . . . . .	14	7.61	4	2.17	18	9.78
Catholic, . . . . .	19	10.33	-	-	19	10.33
Congregational, . . . . .	41	22.28	28	15.22	69	37.50
Episcopal, . . . . .	10	5.44	7	3.80	17	9.24
Hebrew, . . . . .	2	1.08	6	3.26	8	4.34
Methodist, . . . . .	10	5.44	4	2.17	14	7.61
Presbyterian, . . . . .	4	2.17	-	-	4	2.17
Unitarian, . . . . .	11	5.98	5	2.72	16	8.70
Universalist, . . . . .	1	.54	9	4.90	10	5.44
Miscellaneous, . . . . .	3	1.63	-	-	3	1.63
No statistics, . . . . .	6	3.26	-	-	6	3.26
	121	65.76	63	34.24	184	100.00

*G. Occupation of Fathers.*

	Number.	Per Cent.
Agriculture and horticulture (practical), . . . . .	48	26.09
Artisans, . . . . .	42	22.82
Business, . . . . .	51	27.72
Deceased or no statistics, . . . . .	10	5.44
Miscellaneous, . . . . .	14	7.61
Professional, . . . . .	17	9.24
Retired, . . . . .	2	1.08
	184	100.00

*H. Intended Vocations of Students.*

	Number.	Per Cent.
Agriculture or horticulture (practical), . . . . .	73	39.67
Agriculture or horticulture (professional), . . . . .	64	34.78
Business, . . . . .	1	.54
Miscellaneous, . . . . .	1	.54
Professions, . . . . .	7	3.80
Undecided or no statistics, . . . . .	38	20.65
	184	99.98

*I. Farm Experience.*

	Number.	Per Cent.
Brought up on a farm, . . . . .	56	30.43
Not brought up on a farm and having had no, or practically no, farm experience, . . . . .	75	40.76
Not brought up on a farm, but having had some farm experi- ence, . . . . .	53	28.80
	184	99.99

*J. Miscellaneous Statistics.*

Average age, . . . . .	19.22 years.
Number applying for student labor, . . . . .	110 (59.23 per cent.)

TABLE VI. — *Entrance Statistics of Freshman Class.*

Number of applications, . . . . .	288
Admitted, . . . . .	204
Matriculated, . . . . .	184
Failed to report, . . . . .	20
Total, . . . . .	204
Rejected, . . . . .	84
Total, . . . . .	288
Admitted on certificate, . . . . .	128
Admitted on examination, . . . . .	14
Admitted on certificate and examination, . . . . .	42
	184
Admitted without condition, . . . . .	113
Admitted with condition, . . . . .	71
	184

## REPORT OF THE TREASURER

FOR THE FISCAL YEAR ENDING NOV. 30, 1912.

### BALANCE SHEET.

		DR.	CR.
<b>1911.</b>			
Dec. 1.	To cash on hand, . . . . .	\$8,229 09	
	To cash on deposit, . . . . .	15,439 54	
<b>1912.</b>			
Nov. 30.	To special appropriation receipts, State Treasurer, . . . . .	149,782 44	
	By special appropriation disbursements, . . . . .		\$143,655 88
	To experiment station receipts, . . . . .	67,643 34	
	From State Treasurer, . . . . .	\$14,250 00	
	From United States Treasurer, . . . . .	30,000 00	
	From other sources and transfers, . . . . .	23,393 34	
	By experiment station disbursements, . . . . .		68,649 41
	To current account receipts, . . . . .	266,193 52	
	From United States Treasurer, Morrill fund, . . . . .	\$16,666 66	
	From United States Treasurer, Nelson fund, . . . . .	16,666 67	
	From State Treasurer endowment fund, . . . . .	10,613 32	
	From State Treasurer, maintenance, . . . . .	58,000 00	
	From State Treasurer, administration, . . . . .	25,000 00	
	From State Treasurer, instruction, . . . . .	60,000 00	
	From State Treasurer, extension department, . . . . .	20,000 00	
	From other sources and transfers, . . . . .	59,246 87	
	By current account disbursements, . . . . .		275,661 69
	To student trust funds receipts, . . . . .	66,805 76	
	By student trust funds disbursements, . . . . .		62,855 80
	By cash on hand, . . . . .		6,852 44
	By cash on deposit, . . . . .		16,418 47
		\$574,093 69	\$574,093 69

### STATEMENT OF THE FIRST NATIONAL BANK OF AMHERST WITH THE MASSACHUSETTS AGRICULTURAL COLLEGE.

		DR.	CR.
<b>1911.</b>			
Dec. 1.	Balance on hand, . . . . .	\$39,976 40 <sup>1</sup>	
<b>1912.</b>			
Nov. 30.	Deposits for year, . . . . .	551,561 75	
	Interest, . . . . .	1,088 69	
	Disbursements as per warrants, . . . . .		\$547,301 97
	Balance on hand, . . . . .		45,324 87 <sup>1</sup>
		\$592,626 84	\$592,626 84

<sup>1</sup> These amounts are greater Dec. 1, 1911, by \$24,536.86, and Nov. 30, 1911, \$28,791.20, on account of outstanding checks.



SPECIAL APPROPRIATIONS.

NAME OF APPROPRIATION.	Date made.	Amount of Appropriation.	Amount previously expended.	Amount expended during Fiscal Year.	Amount expended to Date.	Amount received from State Treasurer.	Balance on Hand with State Treasurer.
Architects' fees, <sup>1</sup>	-	-	\$1,902 11	\$2,675 00	\$4,577 11	-	-
Dairy building,	1911	\$75,000 00	12,819 86	61,215 25	74,035 11	\$74,035 11	\$964 89
Equipment,	1911	10,000 00	3,355 23	6,644 77	10,000 00	10,000 00	-
Repairs,	1911	15,000 00	4,579 31	10,420 69	15,000 00	15,000 00	-
Small buildings,	1911	15,000 00	7,792 32	6,982 03	14,774 35	14,774 35	225 65
West experiment station,	1911	7,500 00	5,305 18	2,194 82	7,500 00	7,500 00	-
Improvements,	1912	10,000 00	-	10,000 00	10,000 00	10,000 00	-
Addition to Draper Hall,	1912	25,000 00	-	18,314 53	18,314 53	18,314 53	6,685 47
Miscellaneous,	1912	20,000 00	-	14,779 95	14,779 95	14,779 95	5,220 05
Repairs,	1912	15,000 00	-	8,128 84	8,128 84	8,128 84	6,871 16
	-	\$192,500 00	\$85,764 01	\$141,355 88	\$177,109 89	\$172,532 78	\$19,967 22

<sup>1</sup> No appropriation made as yet.

## CURRENT ACCOUNTS.

*Disbursements and Receipts.*

ACCOUNTS.	Disbursements from Dec. 1, 1911, to Nov. 30, 1912.	Receipts from Dec. 1, 1911, to Nov. 30, 1912.	Apportionment for Year ending Nov. 30, 1911.	Balance to Credit.
Administration, . . . . .	\$6,177 60	\$24 72	\$7,240 00	\$1,087 12
Agricultural economics, . . . . .	102 11	-	125 00	22 89
Agricultural education, . . . . .	1,266 84	122 62	1,100 00	-44 22
Agronomy, . . . . .	206 40	5 20	200 00	-1 20
Animal husbandry, . . . . .	264 01	3 89	300 00	39 88
Botanical, . . . . .	1,558 75	970 63	750 00	161 88
Chemical, . . . . .	3,958 87	2,648 23	1,400 00	89 36
Dairying, . . . . .	205 80	20	200 00	-5 60
Dean's office, . . . . .	353 02	11 00	300 00	-42 02
Economics and sociology, . . . . .	48 35	-	100 00	51 65
Entomology, . . . . .	1,359 83	263 99	1,200 00	104 16
Farm, . . . . .	26,207 33	19,919 02	3,000 00	-3,288 31
Farm administration, . . . . .	212 66	11 38	200 00	-1 28
Floriculture, . . . . .	3,887 99	2,869 75	1,300 00	281 76
Forestry, . . . . .	184 57	-	400 00	215 43
General agriculture, . . . . .	537 28	51 63	200 00	-285 65
General horticulture, . . . . .	2,791 01	599 54	2,000 00	-191 47
General maintenance, . . . . .	63,093 90	22,094 07	46,500 00	5,500 17
Graduate school, . . . . .	1 50	-	-	2,366 13
Grounds, . . . . .	3,114 11	85	3,500 00	386 74
History and government, . . . . .	19 93	-	100 00	80 07
Landscape gardening, . . . . .	444 55	473 03	250 00	278 48
Language and literature, . . . . .	544 37	-	750 00	205 63
Library, . . . . .	6,591 12	590 40	6,000 00	- 72
Market gardening, . . . . .	4,452 21	1,851 94	2,400 00	-200 27
Mathematics, . . . . .	209 81	-	350 00	140 19
Military, . . . . .	1,547 43	-	1,550 00	2 57
Physics, . . . . .	227 94	-	525 00	297 06
Physical education, . . . . .	570 99	121 50	500 00	50 51
Pomology, . . . . .	3,502 47	1,233 52	2,000 00	-268 95
Poultry husbandry, . . . . .	3,214 79	1,235 41	2,000 00	20 62
President's office, . . . . .	659 08	2 18	1,000 00	343 10
Registrar's office, . . . . .	383 00	60	400 00	17 60
Rural sociology, . . . . .	39 69	-	100 00	60 31
Salaries, . . . . .	113,525 51	-	110,593 34	-2,932 17
Treasurer's office, . . . . .	891 20	6 88	800 00	-84 32
Veterinary department, . . . . .	1,464 03	19 35	1,400 00	-44 68
Zoology, . . . . .	571 58	329 69	150 00	-91 89
State Treasurer:—				
Endowment fund, . . . . .	-	10,613 32	-	-
Maintenance, . . . . .	-	58,000 00	-	-
Scholarship, . . . . .	-	25,000 00	-	-
Instruction, . . . . .	-	60,000 00	-	-
United States Treasurer:—				
Morrill fund, . . . . .	-	16,666 66	-	-
Nelson fund, . . . . .	-	16,666 67	-	-
Balance beginning fiscal year Dec. 1, 1911, . . . . .	\$254,391 63	\$242,407 87	\$200,883 34	\$11,803 31
Balance on hand Nov. 30, 1912, . . . . .	19,288 62	31,272 38 <sup>1</sup>	-	-7,482 75
	\$273,680 25	\$273,680 25	\$200,883 34	\$4,320 56

<sup>1</sup> This balance is increased by \$5,411.94 on account of extension service deficit, shown in report of that department.

*Summary.*

	Disbursements.	Receipts.
Cash on hand Dec. 1, 1911, <sup>1</sup>	-	\$31,236 57
Institution receipts Nov. 30, 1912,	-	55,461 22
State Treasurer's receipts Nov. 30, 1912,	-	153,613 32
United States Treasurer's receipts Nov. 30, 1912,	-	33,333 33
Total disbursements,	\$254,391 63	-
Bills receivable Dec. 1, 1911, deducted,	-	\$273,644 44
Bills payable Dec. 1, 1911, deducted,	3,059 45	2,265 82
Bills receivable Nov. 30, 1912,	\$251,332 18	\$271,378 62
Bills payable Nov. 30, 1912,	2,964 94	4,058 51
Balance,	21,140 01	-
	\$275,437 13	\$275,437 13

<sup>1</sup> This amount is greater by \$5,411.94 than previous report on account of taking out deficit of the extension service. See the extension service report.

*Comparative Disbursements and Receipts for 1911-12.*

ACCOUNTS.	DISBURSEMENTS.		RECEIPTS.	
	1911.	1912.	1911.	1912.
Administration,	\$6,233 96	\$6,177 60	\$2 36	\$24 72
Agricultural economics,	91 28	102 11	-	-
Agricultural education,	5,705 78	1,266 84	17 67	122 52
Agricultural division,	22,788 40	26,207 33	19,052 37	19,919 02
Agronomy,	-	206 40	-	5 20
Animal husbandry,	-	264 01	-	3 89
Botanical,	1,442 56	1,558 75	769 55	970 63
Chemical,	3,520 50	3,958 87	2,328 43	2,648 23
Dairying,	-	205 80	-	20
Dean's office,	202 45	353 02	-	11 00
Economics and sociology,	-	48 35	-	-
Entomology,	1,084 82	1,359 83	275 79	263 99
Extension service,	20,811 41	-	2,864 87	-
Farm administration,	-	212 66	-	11 38
Floriculture,	3,499 93	3,887 99	2,761 82	2,869 75
Forestry,	392 77	184 57	50	-
General agriculture,	-	537 28	-	51 63
General horticulture,	2,585 00	2,791 01	659 80	599 54
General maintenance,	39,136 73	63,093 90	10,573 42	22,094 07
Graduate school,	1,339 18	1 50	120 00	-
Grounds,	1,900 61	3,114 11	1 70	85
History and government,	-	19 93	-	-
Landscape gardening,	433 72	444 55	256 93	473 03
Language and literature,	598 99	544 37	-	-
Library,	5,542 46	6,591 12	436 91	590 40
Market gardening,	4,413 12	4,452 21	2,293 74	1,851 94
Mathematics,	361 75	209 81	10	-
Military,	1,939 42	1,547 43	24 79	-
Physics,	-	227 94	-	-
Physical education,	497 60	570 99	119 00	121 50
Political science,	85 07	-	-	-
Pomology,	3,425 41	3,502 47	1,156 58	1,233 52
Poultry husbandry,	-	3,214 79	-	1,235 41
President's office,	873 68	659 08	28 44	2 18
Registrar's office,	302 13	383 00	-	60
Rural sociology,	-	39 69	-	-
Salaries,	84,132 15	113,525 51	-	-
Treasurer's office,	764 18	891 20	-	6 88
Veterinary,	1,343 35	1,464 03	17 50	19 35
Zoölogy,	493 40	571 58	346 30	329 69

*Comparative Disbursements and Receipts—Concluded.*

ACCOUNTS.	DISBURSEMENTS.		RECEIPTS.	
	1911.	1912.	1911.	1912.
State Treasurer:—				
Endowment fund, . . . . .	—	—	\$10,613 32	\$10,613 32
Maintenance, . . . . .	—	—	35,000 00	58,000 00
Scholarship, . . . . .	—	—	15,000 00	25,000 00
Instruction, . . . . .	—	—	47,500 00	60,000 00
Extension service, . . . . .	—	—	—	—
Agricultural education, . . . . .	—	—	5,000 00	—
Veterinary, . . . . .	—	—	1,000 00	—
Student labor, . . . . .	—	—	7,500 00	—
Graduate school, . . . . .	—	—	2,500 00	—
United States Treasurer:—				
Morrill fund, . . . . .	—	—	16,666 66	16,666 66
Nelson fund, . . . . .	—	—	16,666 67	16,666 67
	\$215,941 81	\$254,391 63	\$201,555 22	\$242,407 87
Balance beginning fiscal year, . . . . .	—	—	25,211 22	31,272 38 <sup>1</sup>
Balance at close of fiscal year, . . . . .	25,824 63	19,288 62	—	—
	\$241,766 44	\$273,680 25	\$226,766 44	\$273,680 25

<sup>1</sup> In closing accounts the balance of \$35.81, Old Creamery House, was used to close up current accounts.

## EXPERIMENT STATION.

*Disbursements and Receipts.*

ACCOUNTS.	Disbursements from Dec. 1, 1911, to Nov. 30, 1912.	Receipts from Dec. 1, 1911, to Nov. 30, 1912.	Apportionment for Year ending Nov. 30, 1912.	Balance to Credit.
Administration, . . . . .	\$1,690 19	\$2 94	\$1,800 00	\$112 75
Agricultural, . . . . .	4,469 62	1,920 80	2,100 00	—449 02
Asparagus, . . . . .	733 84	—	500 00	—233 84
Botanical, . . . . .	1,127 23	6 17	1,500 00	378 94
Chemical, . . . . .	9,397 06	8,980 25	2,900 00	2,483 19
Cranberry, . . . . .	3,228 96	2,337 89	3,000 00	2,108 93
Entomological, . . . . .	466 03	—	700 00	233 97
Fertilizer, . . . . .	—	—	—	—
Freight, . . . . .	275 76	80	300 00	25 04
Feed law, . . . . .	4,345 00	3,750 00	3,750 00	1,081 45
Graves orchard, . . . . .	676 33	30 00	300 00	—346 33
Horticultural, . . . . .	1,539 15	50	1,350 00	—188 65
Library, . . . . .	89 48	—	300 00	210 52
Meteorology, . . . . .	397 05	—	400 00	2 95
Publications, . . . . .	1,263 53	—	2,400 00	1,136 47
Salaries, . . . . .	29,640 69	—	37,500 00	7,859 31
Treasurer's office, . . . . .	253 13	—	350 00	96 82
Veterinary, . . . . .	275 16	113 00	250 00	87 84
Hatch fund, . . . . .	—	15,000 00	—	—
Adams fund, . . . . .	—	15,000 00	—	—
State fund, . . . . .	—	10,500 00	—	—
Poultry, . . . . .	247 55	—	250 00	2 45
Fertilizer law, . . . . .	8,533 60	10,000 99	—	1,467 39
	\$68,649 41	\$67,643 34	\$59,650 00	\$17,288 02
Balance beginning fiscal year, Dec. 1, 1911, . . . . .	—	—4,090 36	—	—1,217 84
Balance on hand Nov. 30, 1912, . . . . .	3,084 29	—	—	—
	\$71,733 70	\$71,733 70	\$59,650 00	\$16,070 18

*Summary.*

	Disbursements.	Receipts.
Cash on hand Dec. 1, 1911, . . . . .	-	\$4,090 36
Receipts from State Treasurer, . . . . .	-	14,250 00
Receipts from United States Treasurer, . . . . .	-	30,000 00
Receipts from other sources, . . . . .	-	23,393 34
Total disbursements, . . . . .	\$68,649 41	-
	\$68,649 41	\$71,733 70
Bills receivable Nov. 30, 1912, . . . . .	-	2,394 95
Bills payable Nov. 30, 1912, . . . . .	505 53	-
Balance, . . . . .	4,973 71	-
	\$74,128 65	\$74,128 65

*Comparative Disbursements and Receipts for 1911-12.*

ACCOUNTS.	DISBURSEMENTS.		RECEIPTS.	
	1911.	1912.	1911.	1912.
Administration, . . . . .	\$1,669 79	\$1,690 19	\$123 79	\$2 94
Agriculture, . . . . .	4,864 07	4,469 62	2,128 14	1,920 80
Asparagus, . . . . .	748 63	733 84	-	-
Botanical, . . . . .	1,577 35	1,127 23	20 82	6 17
Chemical, . . . . .	9,809 16	9,397 06	7,165 66	8,980 25
Cranberry, . . . . .	4,038 98	3,228 96	4,232 00	2,337 89
Entomology, . . . . .	588 10	466 03	2 50	-
Fertilizer, . . . . .	-	8,533 60	6,094 83	10,000 99
Freight, . . . . .	294 49	275 76	-	80
Feed law, . . . . .	2,891 44	4,345 00	3,000 00	3,750 00
Graves orchard, . . . . .	194 79	676 33	-	30 00
Horticulture, . . . . .	1,439 97	1,539 15	4 36	50
Library, . . . . .	161 56	89 48	-	-
Meteorology, . . . . .	322 16	397 05	-	-
Publications, . . . . .	1,726 40	1,263 53	-	-
Salaries, . . . . .	33,899 31	29,640 69	-	-
Treasurer's office, . . . . .	182 12	253 18	-	-
Veterinary, . . . . .	238 16	275 16	5 00	113 00
Hatch fund, . . . . .	-	-	15,000 00	15,000 00
Adams fund, . . . . .	-	-	15,000 00	15,000 00
State fund, . . . . .	-	-	10,500 00	10,500 00
Poultry, . . . . .	-	247 55	-	-
Tobacco experiments, . . . . .	340 20	-	-	-
	\$64,986 68	\$68,649 41	\$63,277 10	\$67,643 34
Balance beginning fiscal year, . . . . .	-	-	5,799 94	4,090 36
Balance on hand Nov. 30, 1912, . . . . .	4,090 36	3,084 29	-	-
	\$69,077 04	\$71,733 70	\$69,077 04	\$71,733 70

<sup>1</sup> Disbursements were included under plant and animal chemistry.

## EXTENSION SERVICE.

*Disbursements and Receipts.*

	Disbursements.	Receipts.	Apportionment.	Balance.
Miscellaneous, . . . . .	-	-	\$980 00	\$980 00
From State Treasurer, . . . . .	-	\$20,000 00	-	-
Administration, . . . . .	\$14,459 53	462 92	13,320 00	-676 61
Correspondence courses, . . . . .	840 65	616 39	1,000 00	775 74
Itinerant instruction, . . . . .	310 79	55 59	200 00	-55 20
Demonstration orchards, . . . . .	468 84	12 06	600 00	143 22
Dairy improvement, . . . . .	377 71	93 78	600 00	316 07
Boys' and Girls' Club, . . . . .	164 39	12 06	-	-152 33
M. A. C. Improvement Association, . . . . .	161 64	33 78	200 00	72 14
Winter school, . . . . .	2,108 38	1,901 64	1,500 00	1,293 26
Poultry convention, . . . . .	124 66	-	300 00	175 34
Farmers' week, . . . . .	693 83	23 11	500 00	-170 72
Beekeepers' course, . . . . .	151 61	-	200 00	48 39
Packing school, . . . . .	463 89	528 70	-	64 81
Summer school, . . . . .	6 40	43 12	-	36 72
Conference Rural Social workers, . . . . .	511 85	2 50	-	-509 35
District field agent, . . . . .	425 89	-	600 00	174 11
	\$21,270 06	\$23,785 65	\$20,000 00	\$4,079 80
Balance Dec. 1, 1911, . . . . .	5,411 94	-	-	-1,564 21
Balance Nov. 30, 1912, . . . . .	-	2,896 35	-	-
	\$26,682 00	\$26,682 00	\$20,000 00	\$2,515 59

*Summary.*

	Disbursements.	Receipts.
Overdraft, Dec. 1, 1911, . . . . .	\$5,411 94	\$3,785 65
Receipts, Nov. 30, 1912, . . . . .	-	-
Receipts from State Treasurer, . . . . .	-	20,000 00
Disbursements, Nov. 30, 1912, . . . . .	21,270 06	-
	\$26,682 00	\$23,785 65
Bills payable Dec. 1, 1911, deducted, . . . . .	431 92	-
	\$26,250 08	\$23,785 65
Bills receivable Nov. 30, 1912, . . . . .	-	101 37
Bills payable Nov. 30, 1912, . . . . .	916 95	-
Balance overdrawn Nov. 30, 1912, . . . . .	-	3,280 01
	\$27,167 03	\$27,167 03

## AGRICULTURAL DIVISION.

*Disbursements and Receipts.*

	Disbursements.	Receipts.
Agronomy, . . . . .	\$206 40	\$5 20
Animal husbandry, . . . . .	264 01	3 39
Dairying, . . . . .	205 80	20
Farm administration, . . . . .	212 66	11 38
General agriculture, . . . . .	537 28	51 63
Poultry husbandry, . . . . .	3,214 79	1,235 41
Farm, . . . . .	26,207 33	19,919 02
Division totals, . . . . .	\$30,848 27	\$21,226 73

*Summary.*

	Dr.	Cr.
By total division receipts, . . . . .		\$21,226 73
By bills receivable, . . . . .		2,930 15
By net apportionment, . . . . .		6,100 00
To total disbursements, . . . . .	\$30,848 27	
To bills payable, . . . . .	294 16	
To balance, . . . . .		885 55
	\$31,142 43	\$31,142 43

*Inventory of Quick Assets.*

	Nov. 30, 1911.	Nov. 30, 1912.
Inventory of produce, . . . . .	\$4,728 73	\$7,010 93
Inventory of cattle, . . . . .	10,823 00	11,148 00
Inventory of swine, . . . . .	485 00	731 00
Inventory of horses, . . . . .	4,080 00	4,090 00
Inventory of poultry, . . . . .	614 25	1,524 15
Inventory of sheep, . . . . .	-	200 00
	\$20,730 98	\$24,704 08

## HORTICULTURAL DIVISION.

*Disbursements and Receipts.*

	Disbursements.	Receipts.
Floriculture, . . . . .	\$3,887 99	\$2,869 75
Forestry, . . . . .	184 57	-
General horticulture, . . . . .	2,791 01	599 54
Grounds, . . . . .	3,114 11	85
Landscape gardening, . . . . .	444 55	473 03
Market gardening, . . . . .	4,452 21	1,851 94
Pomology, . . . . .	3,502 47	1,233 52
	\$18,376 91	\$7,028 63

*Summary.*

	Dr.	Cr.
By total division receipts, . . . . .		\$7,028 63
By bills receivable, . . . . .		888 65
By apportionment, . . . . .		11,850 00
To total division disbursements, . . . . .	\$18,376 91	
To bills payable, . . . . .	356 81	
To balance, . . . . .	1,033 56	
	\$19,767 28	\$19,767 28

*Inventory of Quick Assets.*

	Nov. 30, 1911.	Nov. 30, 1912.
Inventory of supplies, . . . . .	\$1,064 00	\$621 25

## INVENTORY — REAL ESTATE.

*Land (Estimated Value).*

Baker place, . . . . .	\$2,500 00
Bangs place, . . . . .	2,350 00
Clark place, . . . . .	4,500 00
College farm, . . . . .	37,000 00
Cranberry land, . . . . .	11,063 00
Harlow farm, . . . . .	3,284 63
Kellogg farm, . . . . .	5,868 45
Louisa Baker place, . . . . .	5,636 91
Old creamery place, . . . . .	1,000 00
Pelham quarry, . . . . .	500 00
Westcott place, . . . . .	2,250 00
Allen place, . . . . .	500 00
Charmbury place, . . . . .	450 00
Loomis place, . . . . .	415 00
Hawley & Brown place, . . . . .	675 00
Newell farm, . . . . .	2,800 00
	<hr/>
	\$80,792 99

*College Buildings (Estimated Value).*

Apiary, . . . . .	\$3,000 00
Animal husbandry building, . . . . .	10,000 00
Chemical laboratory, . . . . .	8,000 00
Clark hall, . . . . .	67,500 00
Cold storage laboratory, . . . . .	12,000 00
Dairy building, . . . . .	75,000 00
Dairy barn and storage, . . . . .	30,000 00
Dining hall, . . . . .	35,000 00
Drill hall and gun shed, . . . . .	10,000 00
Durfee range and glass houses, old, . . . . .	10,000 00
Durfee range and glass houses, new, . . . . .	15,000 00
Entomology building, . . . . .	80,000 00
Farmhouse, . . . . .	2,500 00
French hall, . . . . .	17,000 00
Horse barn, . . . . .	5,000 00
Horticultural barn, . . . . .	2,500 00
Horticultural tool shed, . . . . .	2,000 00
Machinery barn, . . . . .	4,000 00
Mathematical building, . . . . .	6,000 00
North dormitory, . . . . .	25,000 00
Physics laboratory, . . . . .	5,500 00
Poultry breeding house, . . . . .	600 00
Poultry brooder house, . . . . .	1,000 00
Poultry incubator cellar and demonstration building, . . . . .	1,400 00
Poultry laboratory, . . . . .	1,300 00
Poultry laying house, . . . . .	1,800 00
Poultry mechanics and storage building, . . . . .	1,900 00
Power plant and storage building, . . . . .	18,500 00
President's house, . . . . .	12,000 00
Quarantine barn, . . . . .	200 00
Sheep shed, . . . . .	1,400 00
Small plant house, with vegetable cellar and cold grapery, . . . . .	4,700 00



*College Buildings (Estimated Value) — Concluded.*

South dormitory, . . . . .	\$35,000 00
Stone chapel, . . . . .	30,000 00
Three houses on Stockbridge Road, . . . . .	5,000 00
Veterinary laboratory and stable, . . . . .	23,500 00
Waiting station, . . . . .	500 00
Wilder hall, . . . . .	37,500 00
Young stock barn, . . . . .	6,500 00
	<hr/>
	\$607,800 00

*College Equipment (Estimated Value).*

Administrative division:—	
Dean's office, . . . . .	\$212 20
President's office, . . . . .	952 40
Registrar's office, . . . . .	263 25
Treasurer's office, . . . . .	2,360 00
Agricultural division:—	
Agronomy, . . . . .	1,737 53
Animal husbandry, . . . . .	1,173 67
Dairy, . . . . .	7,545 64
Farm administration, . . . . .	1,278 49
Farm department, . . . . .	29,749 69
Poultry, . . . . .	3,321 63
Dining hall, . . . . .	4,447 50
Extension department, . . . . .	1,659 35
General maintenance:—	
College supplies, . . . . .	217 82
Fire apparatus, . . . . .	1,332 32
General maintenance, . . . . .	70,890 03
Janitor supplies, . . . . .	253 83
Water mains, . . . . .	8,350 00
General science:—	
Apiary, . . . . .	1,145 67
Botanical, . . . . .	7,991 17
Chemical, . . . . .	10,642 63
Entomology, . . . . .	5,921 89
Microbiology, . . . . .	2,000 00
Mathematics, . . . . .	3,312 50
Physics, . . . . .	2,559 50
Veterinary, . . . . .	8,390 62
Zoölogical laboratory, . . . . .	8,945 53
Zoölogical museum, . . . . .	6,411 93
History and political science, . . . . .	20 75
Horticultural division:—	
Floriculture, . . . . .	6,926 66
Forestry, . . . . .	1,318 64
General horticulture, . . . . .	9,715 28
Grounds, . . . . .	248 12
Landscape gardening, . . . . .	4,575 78
Market gardening, . . . . .	1,383 49
Pomology, . . . . .	2,947 71
Humanities, division of:—	
Economics and sociology, . . . . .	93 00
Language and literature, . . . . .	279 85

*College Equipment (Estimated Value) — Concluded.*

Library, . . . . .	\$67,573 35
Military, . . . . .	1,264 42
Physical education, . . . . .	2,263 12
Rural social science: —	
Agricultural economics, . . . . .	237 25
Agricultural education, . . . . .	716 39
Rural social service, . . . . .	90 35
Textbooks, . . . . .	518 55
Trophy room, . . . . .	1,504 80
	<hr/>
	\$294,744 30

*Experiment Station Buildings (Estimated Value).*

Agricultural laboratory, . . . . .	\$15,000 00
Agricultural barns, . . . . .	5,000 00
Agricultural farmhouse, . . . . .	1,500 00
Agricultural glass house, . . . . .	500 00
Cranberry buildings, . . . . .	2,720 00
Plant and animal chemistry laboratory, . . . . .	30,000 00
Plant and animal chemistry barns, . . . . .	4,000 00
Plant and animal chemistry dairy, . . . . .	2,000 00
Six poultry houses, . . . . .	600 00
Entomological laboratory and glass house, . . . . .	850 00
	<hr/>
	\$62,170 00

*Experiment Station Equipment (Estimated Value).*

Agricultural laboratory, . . . . .	\$6,392 02
Botanical laboratory, . . . . .	5,101 20
Chemical laboratory, . . . . .	16,672 04
Cranberry station, . . . . .	2,167 49
Director's office, . . . . .	3,954 75
Entomological laboratory, . . . . .	23,242 50
Horticultural laboratory, . . . . .	1,762 00
Library, . . . . .	320 00
Meteorology laboratory, . . . . .	1,087 00
Poultry department, . . . . .	543 35
Treasurer's office, . . . . .	381 40
Veterinary laboratory, . . . . .	121 94
	<hr/>
	\$61,745 69

*Inventory Summary.*

Land, . . . . .	\$80,792 99
College buildings, . . . . .	607,800 00
College equipment, . . . . .	294,744 30
Experiment station buildings, . . . . .	62,170 00
Experiment station equipment, . . . . .	61,745 69
	<hr/>
	\$1,107,252 98

## STUDENTS' TRUST FUND ACCOUNTS.

	Disbursements for Year ending Nov. 30, 1912.	Receipts for Year ending Nov. 30, 1912.	Balance on Hand Nov. 30, 1912.	Balance brought forward Dec. 1, 1911.
Athletics, . . . . .	\$8,217 80	\$7,430 50	\$2,749 35	\$3,536 65
Draper Hall, . . . . .	38,835 04	39,783 05	-742 79	-1,690 80
"College signal," . . . . .	1,913 81	1,972 48	608 83	550 16
Keys, . . . . .	15 00	16 25	31 75	30 50
Harlow farm, . . . . .	96 45	120 00	-141 08	164 63
Student deposits, . . . . .	5,792 67	7,119 86	1,881 74	554 55
Kellogg farm, . . . . .	152 78	141 66	24 57	35 69
Trophy room tax, . . . . .	945 56	959 91	622 92	608 57
1914 index, . . . . .	94 03	119 00	24 97	-
Textbooks, . . . . .	4,766 89	4,811 78	426 93	382 04
1913 index, . . . . .	1,422 18	1,357 42	28 42	93 18
1912 index, . . . . .	68 52	44 75	-	23 77
Kappa Sigma House, . . . . .	47 70	47 70	-	-
Uniforms, . . . . .	487 37	2,281 40	2,633 65	239 62
	\$62,855 80	\$66,805 76	\$9,033 13	\$6,054 73

## DETAILED STATEMENT OF THE DINING HALL.

	Liabilities.	Resources.
Dec. 1, 1911, overdraft, . . . . .	\$1,690 80	-
Nov. 30, 1912, total disbursements, . . . . .	38,709 75	-
Nov. 30, 1913, outstanding bills, . . . . .	703 56	-
Nov. 30, 1912, total collections, . . . . .	-	\$39,393 55
Nov. 30, 1912, total collections outstanding, . . . . .	-	1,018 11
Nov. 30, 1912, inventory, . . . . .	-	1,757 50
Nov. 30, 1912, balance, . . . . .	1,065 05	-
	\$42,169 16	\$42,169 16

ENDOWMENT FUND.<sup>1</sup>

	Principal.	Income.
United States grant (5 per cent.), . . . . .	\$219,000 00	\$7,300 00
Commonwealth grant (3½ per cent.), . . . . .	142,000 00	3,313 32
		\$10,613 32

<sup>1</sup> This fund is in the hands of the State Treasurer, and the Massachusetts Agricultural College receives two-thirds of the income from the same.

## BENEFICIARY FUNDS.

*Burnham Emergency Fund.*

	Market Value Dec. 1, 1912.	Par Value.	Income.
Two bonds American Telephone and Telegraph Company 4s, at \$890, . . . . .	\$1,780 00	\$2,000 00	\$80 00
Two bonds Western Electric Company 5s, at \$1,010, . . . . .	2,020 00	2,000 00	100 00
Unexpended balance Dec. 1, 1911, . . . . .	-	-	600 55
	\$3,800 00	\$4,000 00	\$780 55
To amount paid for C. A. Goessmann library, . . . . .	-	-	1,000 00
Overdraft Dec. 1, 1912, . . . . .	-	-	\$219 45

*Library Fund.*

Five bonds New York Central & Hudson River Railroad Company 4s, at \$920, . . . . .	\$4,600 00	\$5,000 00	\$200 00
Five bonds Lake Shore & Michigan Southern Railroad Company 4s, at \$930, . . . . .	4,650 00	5,000 00	200 00
Two shares New York Central & Hudson River Railroad Company stock, at \$108, . . . . .	216 00	200 00	10 50
Amherst Savings Bank, deposit, . . . . .	167 77	167 77	6 18
	\$9,633 77	\$10,367 77	\$416 68
Transferred to college library account, . . . . .	-	-	416 68

## SPECIAL FUNDS.

*Endowed Labor Fund (the Gift of a Friend of the College).*

Two bonds American Telephone and Telegraph Company 4s, at \$890, . . . . .	\$1,780 00	\$2,000 00	\$80 00
Two bonds Lake Shore & Michigan Southern Railroad Company 4s, at \$930, . . . . .	1,860 00	2,000 00	80 00
One bond New York Central Railroad debenture 4s, . . . . .	920 00	1,000 00	40 00
Amherst Savings Bank, deposit, . . . . .	143 39	143 39	5 72
One bond Metropolitan Street Railway, Kansas City Company 5s, at . . . . .	990 00	1,000 00	50 00
	\$5,693 39	\$6,143 39	\$255 72
Unexpended balance Dec. 1, 1911, . . . . .	-	-	247 39
Cash on hand Dec. 1, 1912, . . . . .	-	-	\$503 11

*Whiting Street Scholarship Fund.*

One bond New York Central debenture 4s, . . . . .	\$920 00	\$1,000 00	\$40 00
Amherst Savings Bank, deposit, . . . . .	271 64	271 64	10 84
	\$1,191 64	\$1,271 64	\$50 84
Unexpended balance Dec. 1, 1911, . . . . .	-	-	18 47
	-	-	\$69 31
Disbursements for scholarships for fiscal year ending Nov. 30, 1912, . . . . .	-	-	23 00
Cash on hand Dec. 1, 1912, . . . . .	-	-	\$46 31

*Hills Fund.*

	Market Value Dec. 1, 1912.	Par Value.	Income.
Northampton Institution for Savings, deposit, . . . . .	\$1,180 00	\$1,180 00	\$20 65
One bond American Telephone and Telegraph Company 4s, . . . . .	890 00	1,000 00	40 00
One bond New York Central & Hudson River Railroad debenture 4s, . . . . .	920 00	1,000 00	40 00
One bond New York Central & Hudson River Railroad debenture 3½s, . . . . .	800 00	1,000 00	35 00
Two bonds Metropolitan Street Railway of Kansas City 5s, at \$990, . . . . .	1,980 00	2,000 00	100 00
Three bonds Pacific Telephone and Telegraph Company 5s, at \$990, . . . . .	2,970 00	3,000 00	150 00
One bond Western Electric Company 5s, . . . . .	1,010 00	1,000 00	50 00
Boston & Albany Railroad stocks, 3½ shares at \$213, . . . . .	772 12	362 00	31 68
Amherst Savings Bank, deposit, . . . . .	72 75	72 75	2 88
Electric Securities Company stocks, ½ shares at \$1,000, . . . . .	1,180 00	1,180 00	29 50
	\$10,594 87	\$10,614 75	\$499 71
Less overdraft Dec. 1, 1911, . . . . .	-	-	170 55
	-	-	\$329 16
On April 17, 1912: We withdrew our deposit from the Northampton Institution for Savings and invested it with the Mary Robinson portion of funds in the purchase of two bonds of the Electric Securities Company of New York at par, . . . . . \$1,180 00			
Disbursements by floriculture and botanical departments for fiscal year ending Nov. 30, 1912, . . . . .	-	-	216 58
Cash on hand Dec. 1, 1912, . . . . .	-	-	\$112 58

*Mary Robinson Fund.*

Northampton Institution for Savings, . . . . .	\$820 00	\$820 00	\$14 35
Boston & Albany Railroad stock, ¼ share at \$213, . . . . .	79 86	38 00	3 32
Electric Securities Company stocks, ¼ share at \$1,000, . . . . .	820 00	820 00	20 50
	\$899 86	\$858 00	\$38 17
Unexpended balance Dec. 1, 1910, . . . . .	-	-	89 89
	-	-	\$128 06
On April 17, 1912:— We withdrew our deposit from the Northampton Institution for Savings and invested it with a portion of the Hills fund in the purchase of two bonds of the Electric Securities Company of New York at par, . . . . . \$820 00			
Disbursements for fiscal year ending Nov. 30, 1912, . . . . .	-	-	28 66
Cash on hand Dec. 1, 1912, . . . . .	-	-	\$99 40

*Grinnell Prize Fund.*

Ten shares New York Central & Hudson River Railroad stock at \$108, . . . . .	\$1,080 00	\$1,000 00	\$50 00
Unexpended balance Dec. 1, 1911, . . . . .	-	-	195 74
	\$1,080 00	\$1,000 00	\$245 74
Disbursements for prizes, . . . . .	-	-	50 00
Cash on hand Dec. 1, 1912, . . . . .	-	-	\$195 74

*Massachusetts Agricultural College (Investment).*

	Market Value Dec. 1, 1912.	Par Value.	Income.
One share New York Central & Hudson River Railroad stock,	\$108 00	\$100 00	\$5 00
Unexpended balance Dec. 1, 1911, . . . . .	-	-	55 45
Cash on hand Dec. 1, 1912, . . . . .	-	-	\$60 45

*Gassett Scholarship Fund.*

One bond New York Central & Hudson River Railroad debenture 4s, . . . . .	\$920 00	\$1,000 00	\$40 00
Amherst Savings Bank, deposit, . . . . .	11 64	11 64	44
Unexpended balance Dec. 1, 1911, . . . . .	\$931 64	\$1,011 64	\$40 44
Disbursements for scholarships for fiscal year ending Nov. 30, 1912, . . . . .	-	-	10 51
Cash on hand Dec. 1, 1912, . . . . .	-	-	\$50 95
	-	-	20 00
	-	-	\$30 95

*Danforth Keyes Bangs Fund.*

Two bonds Pacific Telephone and Telegraph Company 5s, at \$990,	\$1,980 00	\$2,000 00	\$100 00
Two bonds Union Electric Light and Power Company 5s, at \$990,	1,980 00	2,000 00	100 00
Two bonds American Telephone and Telegraph Company 4s, at \$890,	1,780 00	2,000 00	80 00
Interest from student loans, . . . . .	-	-	10 45
Unexpended balance Dec. 1, 1911, . . . . .	\$5,740 00	\$6,000 00	\$290 45
Net loans to students during year, . . . . .	-	-	531 57
Cash on hand Dec. 1, 1912, . . . . .	-	-	\$822 02
	-	-	420 00
	-	-	\$402 02

*John C. Cutter Fund.*

One bond Pacific Telephone and Telegraph Company 5s,	\$990 00	\$1,000 00	\$50 00
Unexpended balance Dec. 1, 1911, . . . . .	-	-	78 33
Disbursements for fiscal year to date, . . . . .	-	-	\$128 33
Cash on hand Dec. 1, 1912, . . . . .	-	-	53 61
	-	-	\$74 72

SUMMARY OF BALANCES ON HAND OF THE INCOME FROM FUNDS HELD IN  
TRUST BY THE MASSACHUSETTS AGRICULTURAL COLLEGE.

Hills fund, . . . . .	\$112 58
Endowed labor fund, . . . . .	503 11
Whiting Street scholarship fund, . . . . .	46 31
Mary Robinson fund, . . . . .	99 40
Grinnell prize fund, . . . . .	195 74
Gassett scholarship fund, . . . . .	30 95
Massachusetts Agricultural College investment, . . . . .	60 45
Danforth Keyes Bangs fund, . . . . .	402 02
John C. Cutter fund, . . . . .	74 72
	<hr/>
	\$1,525 28
Burnham emergency fund overdraft, . . . . .	219 45
	<hr/>
	\$1,305 83

I hereby certify that I have this day examined the Massachusetts Agricultural College account, as reported by the treasurer, Fred C. Kenney, for the year ending Nov. 30, 1912. All bonds and investments are as represented in the treasurer's report. All disbursements are properly vouched for, and all cash balances are found to be correct.

CHAS. A. GLEASON,  
*Auditor.*

AMHERST, Dec. 23, 1912.

HISTORY OF SPECIAL FUNDS.

Burnham emergency fund: —

A bequest of \$5,000 from T. O. H. P. Burnham of Boston, made without any conditions. The trustees of the college directed that \$1,000 of this fund should be used in the purchase of the Newell land and Goessmann library. The fund now shows an investment of \$4,000 00

Library fund: —

The library of the college at the present time contains about 38,000 volumes. The income from the fund raised by the alumni and others is devoted to its increase, and additions are made from time to time as the needs of the different departments require. Dec. 27, 1883, William Knowlton gave \$2,000; Jan. 1, 1894, Charles L. Flint gave \$1,000; in 1887 Elizur Smith of Lee, Mass., gave \$1,215. These were the largest bequests, and amount now to . . . . . 10,000 00

Endowed labor fund: —

Gift of a friend of the college in 1901, income of which is to be used for the assistance of needy and deserving students, . . . . . 5,000 00

## Whiting Street scholarship:—

Gift of Whiting Street of Northampton, for no special purpose, but to be invested and the income used.

This fund is now used exclusively for scholarship, . . . \$1,000 00

## Hills fund:—

Gift of Leonard M. and Henry F. Hills of Amherst, Mass., in 1867, to establish and maintain a botanic garden, . . . 10,000 00

## Mary Robinson fund:—

Gift of Miss Mary Robinson of Medfield, in 1874, for scholarship, . . . . . 1,000 00

## Grinnell prize fund:—

Gift of Hon. Wm. Clafin, to be known as the Grinnell agricultural prize, to be given to the two members of the graduating class who may pass the best oral and written examination in theory and practice of agriculture, given in honor of George B. Grinnell of New York, . . . . . 1,000 00

## Gassett scholarship fund:—

Gift of Henry Gassett of Boston, the income to be used for scholarship, . . . . . 1,000 00

## Massachusetts Agricultural College investment fund:—

Investment made by vote of trustees, in 1893; to purchase one share New York Central & Hudson River Railroad stock. The income from this fund has been allowed to accumulate, . . . . . 100 00

## Danforth Keyes Bangs fund:—

Gift of Louisa A. Baker of Amherst, Mass., April 14, 1909, the income thereof to be used annually in aiding poor, industrious and deserving students to obtain an education in said college, . . . . . 6,000 00

## John C. Cutter fund:—

Gift of Dr. John C. Cutter of Worcester, Mass., an alumnus of the college, who died in August, 1909, to be invested by the trustees, and the income to be annually used for the purchase of books on hygiene, . . . . . 1,000 00

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\$40,100 00

## PRIZES.

Sophomore prize in botany, given by Prof. A. V. Osmun of the department of botany, to that member of the sophomore class who presents the best herbarium in the regular course (this prize was first offered in 1908 with the hope that it might stimulate a greater interest on the part of the students in this line of work), . . . . . \$5 00



Special prize, given by the Western Alumni Association to that member of the sophomore class who during his first two years has shown the greatest improvement in scholarship, character and example, . . . . .	\$25 00
Animal husbandry. The F. Lothrop Ames prize, given by F. Lothrop Ames, Langwater Farms, North Easton, Mass., consisting of \$150 a year, offered for a period of five years, to be given to the three students standing highest in the work of advanced live stock judging, and to be used in defraying their expenses incurred by participation in the students' judging contest at the National Dairy Show, Chicago. Given in May, 1912, available first in autumn of 1912, and for the four succeeding years, . . . . .	150 00
	<hr style="width: 100px; margin-left: auto; margin-right: 0;"/> \$180 00

FRED C. KENNEY,  
*Treasurer.*







# Massachusetts Agricultural College

THE EXTENSION SERVICE

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## Summer School of Agriculture and Country Life



AMHERST, MASS.

JULY 1--AUGUST 2, 1913



" THE AMHERST MOVEMENT "

SUMMER SCHOOL OF  
AGRICULTURE AND COUNTRY LIFE  
AND  
SCHOOL FOR RURAL SOCIAL WORKERS



THE COLLEGE POND

**AMHERST, MASS.**

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Published six times a year by the Massachusetts Agricultural College, January, February, March, May, September and October.

Entered as second-class matter at the Postoffice, Amherst, Mass.





## ANNOUNCEMENT

The Summer School of Agriculture and Country Life at Massachusetts Agricultural College will open July 1, 1913, for a term of four weeks, closing July 29. This will be the sixth session of this Summer School, those of the past five years having been highly successful. The experience of these five



THE CHAPEL

years will aid in making material improvements for the session of 1913. The work of the Summer School was designed originally for school teachers, and the attendance has been largely of that class. Special attention will be given to the needs of teachers again this year. It has been found, however, that there are many persons who seek a general knowledge of theoretical and practical agriculture and who can come to the college conveniently during the summer

season. Extended courses will be offered for the benefit of such persons also. The courses offered for the current year may be somewhat roughly grouped as follows :

1. Course in practical agriculture and horticulture.
2. Courses in elementary sciences bearing on agriculture and horticulture.
3. Courses in agricultural education.
4. Courses in agricultural economics and rural sociology.
5. Courses on play and recreation.
6. Courses in domestic economy and household science.
7. Groups of courses, arranged especially for Rural Social Workers, but open also to others interested in community development.

From these courses it will be possible to make up programs of work suitable to the needs of almost everyone, but especially to school teachers, principals, superintendents, school committeemen, farm owners, householders, suburban residents, clergymen, pastors, preachers, social workers, and those who have only a general interest in agriculture. Persons who are in doubt as to what courses will suit their needs should correspond with the Director of the Summer School, who will gladly advise in all such matters.

## CALENDAR FOR THE SUMMER SCHOOL

Monday, June 30. Registration.

July 1. Courses for first two weeks begin.

July 4 (holiday). Demonstration of municipal celebration of the day.  
Townspople and college co-operating.

July 15. Registration day for clergymen and other rural leaders.

July 16. Courses of second two weeks begin.

July 16—23. Boys' camp.

July 29 (noon). Summer School ends.

July 29 (2 P. M.) Conference for Rural Community Leaders begins.

August 2 (afternoon). Conference for Rural Community Leaders ends.

## SUMMER SCHOOL FACULTY

Kenyon L. Butterfield, LL. D. President of the College. Head of Division of Rural Social Science.

William D. Hurd, M. Agr. Director of The Extension Service.

Robert H. Bogue, B. Sc. Assistant in Chemistry.

Alexander E. Cance, Ph.D. Associate Professor of Agricultural Economics.

Joseph Chamberlain, Ph.D. Associate Professor of Organic and Agricultural Chemistry.

William D. Clark, M. F. Professor of Forestry.

Laura Comstock. Extension Professor (elect) of Home Economics.

Samuel Coons. Instructor in Butter making.

Guy C. Crampton, Ph.D. Associate Professor of Entomology.

Elmer K. Eyerly, A. M. Associate Professor of Rural Sociology.

Burton N. Gates, Ph.D. Assistant Professor of Beekeeping.

B. C. Georgia, B. Sc. Instructor in Market Gardening.

Harold M. Gore, M. A. C. '13. Assistant in Boys' Camp.

John C. Graham, B. Sc. Agr. Associate Professor of Poultry Husbandry.

Charles R. Green, B. Agr. Librarian.

F. Josephine Hall. Adviser for Women, Waltham, Mass.

William R. Hart, A. M. Professor of Agricultural Education.

Sidney B. Haskell, B. Sc. Associate Professor of Agronomy.

Curry S. Hicks, B. Sc. Assistant Professor of Physical Education and Hygiene.

- George S. Holcomb, A. B., S. T. B. Lecturer in History.  
William P. B. Lockwood, B. Sc. Agr. Associate Professor of Dairying.  
Frederick A. McLaughlin, B. Sc. Assistant in Botany.  
John A. McLean, A. B., B. Sc. Agr. Associate Professor of Animal Husbandry.  
C. J. Maynard. Author and Lecturer on Bird Life, West Newton, Mass.  
Orion A. Morton. Extension Professor of Agricultural Education.  
E. L. Morgan, A. M. Community Field Agent.  
A. Vincent Osmun, M. Sc. Assistant Professor of Botany.  
Charles A. Peters, Ph. D. Associate Professor of Inorganic and Soil Chemistry.  
Laura Post. Assistant in Physical Education, Wellesley College, Wellesley, Mass.  
Edward Tallmadge Root. Secretary of the Federation of Churches of Massachusetts and Rhode Island, Boston.  
Frederick W. Ried. Director of Practical Arts, State Normal and Training Schools, Framingham, Mass.  
John A. Scheuerle. Formerly pastor of County Church, Hartford, Vt.  
George E. Stone, Ph.D. Professor of Botany.  
Frank A. Waugh, M. Sc. Head of Division of Horticulture and Professor of Landscape Gardening.  
Edward A. White, B. S. Professor of Floriculture.

## **Committees of the Summer School Faculty**

COURSES OF STUDY AND REGISTRATION  
Professors Haskell, Graham, Cance, Hurd.

EXCURSIONS  
Professors White, Osmun, Hurd.

SOCIAL EVENINGS  
Professors Sears, Hart, McLean, Hurd, Miss Hall

ATHLETICS AND RECREATION  
Professors Lockwood, Waugh, Eyerly, Hicks, Hurd, Miss Post.

So far as possible, the members of the Summer School faculty are selected from the regular faculty of the College. Where instructors are engaged from other institutions great care is taken to secure men and women eminent in their respective lines of work.

## THE COURSES OF STUDY

### Group A. General Agriculture, Dairying and Animal Husbandry.

**1. Soils, Tillage and Field Crops.** The chemical, physical and biological composition of the soil and the relation of each to plant growth ; the formation of soils ; the natural and artificial sources of fertility : the methods and implements of tillage : the whole forming an introduction to modern scientific agriculture. In class room and field exercises some attention will be paid to the methods used in producing grasses, corn, potatoes and other crops, under New England conditions. Five exercises a week for four weeks.

PROFESSOR HASKELL



HAYING

**2. Domestic Animals.** This course will deal with the different breeds and types of farm animals. Two main lines of work will be studied, viz. : judging and feeding. Greater attention will be devoted to horses and dairy cattle. Living domestic animals supply the best of all objects for teaching purposes in primary and intermediate schools, and this course should prove very suggestive to capable teachers. Five hours a week for four weeks.

PROFESSOR MCLEAN



**3. Modern Dairying.** A strictly up-to-date course in the production and handling of milk and cream, probably the most important branch of agricultural industry in Massachusetts. The course will be practical rather than theoretical, and will cover briefly : composition and secretion of milk ; principles and methods of creaming ; abnormal milk and causes ; proper handling of milk and cream on the farm ; value of milk as food ; relation of milk to the public health : handling and care of milk in the home ; methods used in production of sanitary and certified milk. Five hours a week for four weeks.

PROFESSOR LOCKWOOD

4. *A Dairy Laboratory Course.* Consists of

- First week—Two 2-hour periods in Babcock testing.  
Second week—Two 2-hour “ Market milk work.  
Third week—Two 2-hour “ Separator work.  
Fourth week—Two 2-hour “ Butter making.

Students taking this course are required to take Course 3. MR. COONS.



STOCK AT PASTURE

5. *Poultry Breeding and Management.* Course will cover the following subjects: Poultry house construction; incubation and breeding; care of poultry in summer; winter egg production; marketing eggs and poultry; poultry diseases. Laboratory work will consist of caring for incubators and brooders and managing young chicks. In addition to this, as much practical work as possible will be given. This will include poultry carpentry, caring for breeders and layers, also some elementary work in judging. Three lectures and two laboratory periods a week for four weeks.

PROFESSOR GRAHAM

**Group B. Horticulture, Forestry, Landscape Gardening.**

6. *Fruit Growing.* Modern methods of propagating, planting, cultivating, pruning, fertilizing and spraying fruit trees; of planning and managing orchards; selling fruit. Lectures, demonstrations and ample field exercises. Five exercises a week for four weeks.

PROFESSOR SEARS



SPRAYING DEMONSTRATION

7. *Practical Gardening.*—

This course will consist almost wholly of practical field exercises in planting, training, cultivating, etc., and while no special effort will be made to put the work into common school form, the exercises will be especially valuable to school garden teachers. Course limited to twenty pupils. Five exercises a week for four weeks.

MR. GEORGIA

8. *Trees, Shrubs and Herbaceous Perennials.* This course deals with the identification, propagation and culture of native and introduced species. It enables the student to select wisely from the many species those best suited for home, school or park planting, and emphasizes the attractive points of the better species. Five exercises a week, first two weeks.

PROFESSOR WHITE



WILDER HALL

9. *Home Flower Growing.* A course designed to give information regarding the culture of tender annuals and perennials. The propagation and

culture of such plants as cannas, dahlias, sweet peas, pansies and the like ; the propagation of annuals from seed and by cuttings, in dwelling houses or school rooms : plants for window boxes, piazza boxes or urns, and the general culture of all plants as it may be carried on without glass houses. Five exercises a week for last two weeks. PROFESSOR WHITE

**10. Forestry.** This course of ten lectures will cover the growth of the forestry movement in this country ; the status of forestry in the United States and abroad, and the possibilities of better forestry in Massachusetts. The problems of woodland management will be briefly discussed and specific problems will be considered at private conference hours by appointment. Five lectures a week for the first two weeks. PROFESSOR CLARK



FOREST NEAR AMHERST

**11. Landscape Gardening.** Some of the elementary principles of the art in their immediate application to the improvement of school grounds, the treatment of home grounds and to village and rural improvement ; also, the use of landscape study as a branch of art for teaching in the public schools. Five lectures a week for first two weeks. PROFESSOR WAUGH

**Group C. Sciences Related to Agriculture.**

**12. Elementary Chemistry.** An introduction to chemistry, with special reference to agriculture and agricultural industries. The course consists largely of laboratory experiments and is adapted especially to science teachers or to those who wish to know something of this fundamental science. Five 2-hour exercises a week for four weeks. MR. BOGUE

**13. Agricultural Chemistry.** This course considers briefly some of the more common and important facts in the chemistry of soils, fertilizers, plants and animals, studying their composition, reactions and relations to each other and showing the reasons for agricultural practices; the preparation of substances of agricultural importance, such as superphosphates, lead arsenate, Bordeaux mixture, etc. It is aimed to make the course practical and suggestive, especially to those engaged in Agricultural High School work, and it is therefore largely experimental. As some previous knowledge of chemistry is assumed, Course 12 or its equivalent is required. Five 2-hour exercises a week for four weeks.

PROFESSORS CHAMBERLAIN AND PETERS

**14. Plant Experiments and School Demonstration Material.** A lecture course illustrated by simple experiments in plant life, with home-made apparatus and methods of preparing plant material useful in schools, such as seeds and seedlings, common plant diseases, etc. A valuable course for science teachers and others interested in plant life. Five exercises a week for first two weeks.

PROFESSOR STONE AND MR. McLAUGHLIN

**15. General Botany.** Morphology, physiology and ecology of plants. This course is especially suited to the needs of science and nature study teachers and amateur botanists. Previous training in the subject is not required. Five lectures a week for second two weeks.

PROFESSOR OSMUN

**16. Cryptogamic Botany.** This is largely a laboratory course, consisting of stereoscopic and field study of lower forms of plant life, including algae, fungi, mosses and ferns. The major portion of the time may be devoted to some special group if desired by the class. Previous training in botany is required. Limited to twenty pupils. Three 2-hour exercises for second two weeks.

PROFESSOR OSMUN

**17. Bird Life.** A study of the local bird fauna, conducted largely in the field. Special attention is given to economic relations of the birds and to nesting habits. Five exercises a week for first two weeks.

MR. MAYNARD

**18. Insects and Disease.** A course of lectures dealing with the symptoms and causes of the commonest insect-borne diseases, in which especial emphasis is laid upon the part played by insects in the transmission of disease and modern sanitary methods for the prevention of disease dissemination. This course is entirely independent of the other courses offered in entomological subjects, and no previous preparation is necessary. Two lectures a week for four weeks.

PROFESSOR CRAMPTON

**19. Insect Life.** An introductory course arranged with especial reference to the needs of teachers in the grade schools and high schools, and also those expecting to take up lines of agricultural work where some knowledge of insects is desirable. The forms selected for study are those easily obtained and of economic importance. How to recognize them and their work and how to control them will be given especial attention, and methods



of making collections will also be included. A portion of the time will be spent in the field, studying insects under natural conditions. Three class and two laboratory or field periods a week for four weeks.

PROFESSOR CRAMPTON

**20. Entomology.** A course planned to follow the preceding, and for persons who already have some knowledge of the subject. Careful studies of insect life histories and habits, and of forms not included in the introductory course. Two lectures, one 2-hour and one 1-hour laboratory periods a week for four weeks.

PROFESSOR CRAMPTON



AFTER A PICKING. M. A. C. SCHOOL GARDEN

**21. Beekeeping.** A course designed particularly for school teachers or beginners in the subject. It comprises the elementary and practical features of the beekeeping industry, including equipment, handling and manipulation of bees, essential apparatus; also a discussion of the diseases and names of the honey bee; the utilization of bees as nature study material in the lecture and school room, as well as for pleasure. Five lectures and such laboratory periods as can be arranged each week second two weeks.

PROFESSOR GATES

**22. Handicrafts and Practical Arts.** A course to include design and its application to rural school projects, such as binding and its various problems, basketry, elementary weaving, thin and thick cardboard, construction, leather work, bagging projects, rural dyeing and sandtable construction work directly related to pre-vocational geography and history. Five exercises a week for four weeks.

MR. RIED

**Group D. Home Economics.**

**23. Home Economics for Rural and Village Schools.** The aim of this course will be to give work in elementary cookery, including both theory and practice. This will be suggestive to those interested in the "noon" lunch problem of village or country school. Special points discussed will be adequate equipment and cost of same; nature and kind of food materials; the setting of the table, serving, correct table etiquette; care of the house; personal hygiene; sanitation. Four lectures and two cookery demonstrations each week for first two weeks.

PROFESSOR COMSTOCK, assisted by MISS BORDEN



ORGANIZED PLAY, 1912 CONFERENCE

**24. Home Economics.** A course which will give one an insight into the general work of home economics. Special emphasis will be placed on three distinct phases—food, household management and sanitation. Three lectures and two demonstrations a week for four weeks.

PROFESSOR COMSTOCK, assisted by MISS BORDEN

**25. Household Science.** This course is intended primarily for the wives of clergymen who take work in the summer school. Properly balanced menus, budget making, household accounts and systematic house-keeping are topics that will be discussed. Five lectures a week for second two weeks.

PROFESSOR COMSTOCK, assisted by MISS BORDEN

**Group E. Agricultural Education.**

**26. Rural School Problems.** This course will consist of lectures, discussions and readings on such topics as rural school supervision, courses of study for rural schools, rural school buildings and other equipment, qualifications of rural teachers, and methods of instruction as influenced by a rural school curriculum. Five lectures a week for first two weeks.

PROFESSOR HART

**27. Home and School Gardens.** This course will consist of lectures, discussions and readings on such topics as planning and instruction in garden work, care of school gardens during vacations, supervision of home gardens, relation of garden and home work to the school work, agricultural clubs, exhibition of products and canning clubs. Five lectures a week for second two weeks. To follow Course 26.

PROFESSOR MORTON

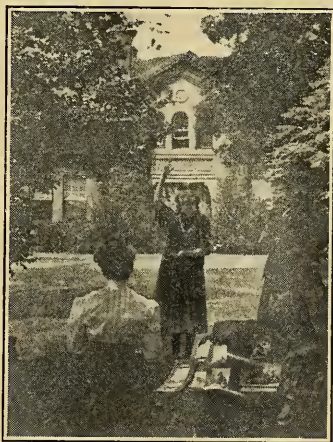
**Group F. Organized Play and Recreation.**

**28. School Hygiene and Recreation.** This course will consist of lectures on rural school hygiene and sanitation; demonstrations of plays and games for children in rural schools. Five lessons a week for first two weeks.

PROFESSOR HICKS  
AND MISS POST

**29. Organized Play and Recreation.** A course discussing the place which organized play may take in community development. Such subjects as methods of organizing and directing the activities, games, athletics, festivals and pageantry will be taken up. Demonstrations will be given. Five lectures a week with extra afternoon demonstrations for second two weeks.

Instructor to be announced



GIRLS' CAMPFIRE MOVEMENT,  
1912 CONFERENCE



# Summer School Schedule, 1913

	8.20—9.15	9.25—10.15	10.28—11.15	11.25—12.15	Afternoon
<b>Monday</b>	<ol style="list-style-type: none"> <li>1 Soils and Tillage</li> <li>8 Trees and Shrubs</li> <li>9 Home Flower Gardening</li> <li>12 Elementary Chemistry</li> <li>15 Insect Life</li> <li>23 Home Econ. for Rural Schools</li> <li>24 Home Econ. for Rural Schools</li> <li>25 Professional Science</li> <li>26 Practical Agricultural Problems</li> <li>31 Rural Education</li> <li>35 Econ. Aspects New Eng. Agric. at 2 weeks</li> </ol>	<ol style="list-style-type: none"> <li>2 Domestic Animals</li> <li>6 Fruit Growing</li> <li>12 Elementary Chemistry (continued)</li> <li>15 General Botany</li> <li>22 Handicrafts and Practical Arts</li> <li>28 School Hygiene and Recreation</li> <li>35 Organized Play and Recreation</li> <li>39 Sociological Aspects New Eng. Agric. at 2 weeks</li> </ol>	<ol style="list-style-type: none"> <li>3 Dairying</li> <li>7 Practical Gardening</li> <li>11 Analytical Chemistry</li> <li>14 Plant Experiments</li> <li>16 Plant Experiments</li> <li>20 Cytological Botany</li> <li>24 Home Economics</li> <li>28 Church and Rural Problem</li> <li>32 Church and Rural Problem at 2 weeks</li> </ol>	<ol style="list-style-type: none"> <li>5 Poultry</li> <li>7 Practical Gardening</li> <li>10 Forestry</li> <li>13 Agricultural Chemistry (continued)</li> <li>17 Cytological Botany</li> <li>21 Bird Life</li> <li>25 Rekeeping</li> <li>29 Home School Problems</li> <li>32 Rural School Problems</li> <li>34 Rural Literature</li> <li>36 Development of Community</li> </ol>	<ol style="list-style-type: none"> <li>4 Laboratory Dairying, 1:30—3:30</li> <li>Informal conferences or educational trips</li> <li>tips</li> </ol>
<b>Tuesday</b>	<ol style="list-style-type: none"> <li>1 Soils and Tillage</li> <li>6 Trees and Shrubs</li> <li>9 Home Flower Gardening</li> <li>12 Elementary Chemistry</li> <li>15 Insect Life (laboratory)</li> <li>23 Home Econ. for Rural Schools (demonstration)</li> <li>24 Home Econ. for Rural Schools (demonstration)</li> <li>25 Professional Science</li> <li>26 Practical Agricultural Problems</li> <li>31 Rural Education</li> <li>35 Econ. Aspects New Eng. Agriculture</li> </ol>	<ol style="list-style-type: none"> <li>2 Domestic Animals</li> <li>6 Fruit Growing</li> <li>12 Elementary Chemistry (continued)</li> <li>15 General Botany</li> <li>22 Handicrafts and Practical Arts</li> <li>28 School Hygiene and Recreation</li> <li>35 Organized Play and Recreation</li> <li>39 Sociological Aspects New Eng. Agric. at 2 weeks</li> </ol>	<ol style="list-style-type: none"> <li>3 Dairying</li> <li>7 Practical Gardening</li> <li>11 Analytical Chemistry</li> <li>14 Agricultural Chemistry</li> <li>16 Plant Experiments</li> <li>20 Entomology (laboratory)</li> <li>24 Church and Rural Problem</li> <li>28 Church and Rural Problem</li> <li>32 Church and Rural Problem</li> </ol>	<ol style="list-style-type: none"> <li>5 Poultry</li> <li>7 Practical Gardening</li> <li>10 Forestry</li> <li>13 Agricultural Chemistry (continued)</li> <li>17 Cytological Botany</li> <li>21 Bird Life</li> <li>25 Rekeeping</li> <li>29 Home School Problems</li> <li>32 Rural School Problems</li> <li>34 Rural Literature</li> <li>36 Development of Community</li> </ol>	<ol style="list-style-type: none"> <li>4 Laboratory Dairying, 1:30—3:30</li> <li>Organized Play and Recreation, 3:30—5:30</li> </ol>
<b>Wednesday</b>	<ol style="list-style-type: none"> <li>1 Soils and Tillage</li> <li>8 Trees and Shrubs</li> <li>9 Home Flower Gardening</li> <li>12 Elementary Chemistry</li> <li>15 Insect Life</li> <li>23 Home Econ. for Rural Schools</li> <li>24 Home Econ. for Rural Schools</li> <li>25 Professional Science</li> <li>26 Practical Agricultural Problems</li> <li>31 Rural Education</li> <li>35 Econ. Aspects New Eng. Agriculture</li> </ol>	<ol style="list-style-type: none"> <li>2 Domestic Animals</li> <li>6 Fruit Growing</li> <li>12 Elementary Chemistry (continued)</li> <li>15 General Botany</li> <li>22 Handicrafts and Practical Arts</li> <li>28 School Hygiene and Recreation</li> <li>35 Organized Play and Recreation</li> <li>39 Sociological Aspects New Eng. Agric. at 2 weeks</li> </ol>	<ol style="list-style-type: none"> <li>3 Dairying</li> <li>7 Practical Gardening</li> <li>11 Analytical Chemistry</li> <li>14 Agricultural Chemistry</li> <li>16 Plant Experiments</li> <li>20 Entomology (laboratory)</li> <li>24 Church and Rural Problem</li> <li>28 Church and Rural Problem</li> <li>32 Church and Rural Problem</li> </ol>	<ol style="list-style-type: none"> <li>5 Poultry</li> <li>7 Practical Gardening</li> <li>10 Forestry</li> <li>13 Agricultural Chemistry (continued)</li> <li>17 Cytological Botany</li> <li>21 Bird Life</li> <li>25 Rekeeping</li> <li>29 Home School Problems</li> <li>32 Rural School Problems</li> <li>34 Rural Literature</li> <li>36 Development of Community</li> </ol>	<ol style="list-style-type: none"> <li>4 Laboratory Dairying, 1:30—3:30</li> <li>Organized Play and Recreation, 3:30—5:30</li> <li>tips</li> <li>evening.</li> </ol>
<b>Thursday</b>	<ol style="list-style-type: none"> <li>1 Soils and Tillage</li> <li>8 Trees and Shrubs</li> <li>9 Home Flower Gardening</li> <li>12 Elementary Chemistry</li> <li>15 Insect Life</li> <li>23 Home Econ. for Rural Schools (demonstration)</li> <li>24 Home Econ. for Rural Schools (demonstration)</li> <li>25 Professional Science</li> <li>26 Practical Agricultural Problems</li> <li>31 Rural Education</li> <li>35 Econ. Aspects New Eng. Agriculture</li> </ol>	<ol style="list-style-type: none"> <li>2 Domestic Animals</li> <li>6 Fruit Growing</li> <li>12 Elementary Chemistry (continued)</li> <li>15 General Botany</li> <li>22 Handicrafts and Practical Arts</li> <li>28 School Hygiene and Recreation</li> <li>35 Organized Play and Recreation</li> <li>39 Sociological Aspects New Eng. Agric. at 2 weeks</li> </ol>	<ol style="list-style-type: none"> <li>3 Dairying</li> <li>7 Practical Gardening</li> <li>11 Analytical Chemistry</li> <li>14 Agricultural Chemistry</li> <li>16 Plant Experiments</li> <li>20 Entomology (laboratory)</li> <li>24 Church and Rural Problem</li> <li>28 Church and Rural Problem</li> <li>32 Church and Rural Problem</li> </ol>	<ol style="list-style-type: none"> <li>5 Poultry</li> <li>7 Practical Gardening</li> <li>10 Forestry</li> <li>13 Agricultural Chemistry (continued)</li> <li>17 Cytological Botany</li> <li>21 Bird Life</li> <li>25 Rekeeping</li> <li>29 Home School Problems</li> <li>32 Rural School Problems</li> <li>34 Rural Literature</li> <li>36 Development of Community</li> </ol>	<ol style="list-style-type: none"> <li>4 Laboratory Dairying, 1:30—3:30</li> <li>Organized Play and Recreation, 3:30—5:30</li> <li>tips</li> <li>evening.</li> </ol>
<b>Friday</b>	<ol style="list-style-type: none"> <li>1 Soils, Tillage and Crops</li> <li>8 Trees and Shrubs</li> <li>9 Home Flower Gardening</li> <li>12 Elementary Chemistry</li> <li>15 Insect Life</li> <li>23 Home Economics for Rural Schools</li> <li>24 Home Economics for Rural Schools</li> <li>25 Professional Science</li> <li>26 Practical Agricultural Problems</li> <li>31 Rural Education</li> <li>35 Econ. Aspects New Eng. Agriculture</li> </ol>	<ol style="list-style-type: none"> <li>2 Domestic Animals</li> <li>6 Fruit Growing</li> <li>12 Elementary Chemistry (continued)</li> <li>15 General Botany</li> <li>22 Handicrafts and Practical Arts</li> <li>28 School Hygiene and Recreation</li> <li>35 Organized Play and Recreation</li> <li>39 Sociological Aspects New Eng. Agric. at 2 weeks</li> </ol>	<ol style="list-style-type: none"> <li>3 Dairying</li> <li>7 Practical Gardening</li> <li>11 Analytical Chemistry</li> <li>14 Agricultural Chemistry</li> <li>16 Plant Experiments</li> <li>20 Entomology (laboratory)</li> <li>24 Church and Rural Problem</li> <li>28 Church and Rural Problem</li> <li>32 Church and Rural Problem</li> </ol>	<ol style="list-style-type: none"> <li>5 Poultry</li> <li>7 Practical Gardening</li> <li>10 Forestry</li> <li>13 Agricultural Chemistry (continued)</li> <li>17 Cytological Botany</li> <li>21 Bird Life</li> <li>25 Rekeeping</li> <li>29 Home School Problems</li> <li>32 Rural School Problems</li> <li>34 Rural Literature</li> <li>36 Development of Community</li> </ol>	<ol style="list-style-type: none"> <li>4 Informal conferences or educational trips</li> <li>Social evening</li> </ol>
<b>Saturday</b>	All day excursions to points of scenic beauty or historic interest.				
<b>Sunday</b>	Vespers at 5 o'clock.				

## SCHOOL FOR RURAL SOCIAL WORKERS

This year more of a feature will be made of the group of courses given especially for those who might be classed as Rural Social Workers. These courses are intended for clergymen, teachers, librarians, town officers, grange workers and others who devote a considerable portion of their time to problems of community development. Courses 30 to 36 inclusive, as given in this bulletin, are designed for the needs of these persons. All other courses given during this period are also open to those who register.

From all of these courses a group of studies can be arranged which will present the rural problem from several standpoints, and will serve to show the relationships of the workers in the different lines to their respective fields and to the larger community problems which are constantly being presented to them.

### Group G. Courses especially for Rural Social Workers,

**30. *Practical Problems in New England Agriculture.*** An outline of the agricultural situation in New England discussed from the standpoint of production. Such subjects as the soil and maintenance of fertility, economic use of commercial fertilizers, and the production of such staple crops as corn, potatoes and hay, under New England conditions, will be considered. Five lectures, third week. PROFESSOR HURD

**31. *Economic Aspects of New England Agriculture.*** A series of ten lectures on agriculture considered as an industry and on some of the immediate social and economic problems of the farmer. Some of the topics treated are: The characteristics of the agricultural industry; the relation of agriculture to other industries; the maintenance of the economic position of the farmer; the farmer and the market; co-operative endeavors; organization of the rural social forces. The lectures will deal in a very general and simple way with the problems of farm life, and are designed to give a helpful viewpoint to teachers and leaders in rural communities. Five lectures a week second two weeks. PROFESSOR CANCE

**32. *The Church and Rural Problem.*** The church and its spiritual relationship to the community and the place the church and its pastor should take in the economic and industrial development of the community. The subjects will be divided by Mr. Root and Mr. Schuerle. Five lectures a week second two weeks. REV. EDWARD TALLMADGE ROOT AND MR. JOHN A. SCHUERLE.

**33. *Sociological Aspects of New England Agriculture.*** Personal qualities and social conditions necessary to successful co-operative endeavor; the various forms of co-operative organizations viewed in their industrial, intellectual and moral aspects; the influence of co-operation on the farmers' individualism, conservatism, self-help, thrift, contentment, and on agrarian legislation, scientific agriculture and farm labor; the relation of co-operation

to neighborhood life, to community pride and loyalty, to further associated effort, to class stability, solidarity and status ; the demand of co-operation for a new type of leadership, the relation of co-operation to socialism and the competitive system. Five lectures a week second two weeks.

PROFESSOR EYERLY

**34. Rural Literature.** A study of the literature, both prose and poetry, which interprets nature from the viewpoint of the lover of country life, and presents the idealistic side of agriculture and other rural pursuits. Five lectures a week for second two weeks.

PROFESSOR HOLCOMB



EXCURSION TO STUDY SOIL FORMATIONS

**35. Community Co-operation in the Re-directing of the Rural and Village School.** This course will include a brief history of the general development of the graded school, its advantages and disadvantages from the standpoint of the country school, present strong and weak phases, present trend, future possibilities, and the constructive assistance which the community may give in the work of re-direction. Five lectures, fourth week

PROFESSOR MORTON

**36. The Development of the Community.** A course dealing with the principles underlying progress in rural communities ; relation of community forces, ideals and leadership to progress ; principles of community control ; the community analysis ; the community progress program. Five lectures a week, second two weeks.

PROFESSOR MORGAN

## GENERAL PLAN OF THE SUMMER SCHOOL WORK

The formal instruction in the Summer School is given in definite courses herein described. From these each pupil may elect courses of not less than ten nor more than fifteen exercises a week, unless a larger or smaller amount of work is allowed by the Director. These courses include a large amount of field work, observation trips, outdoor exercises and laboratory experiments.

Besides these, general field exercises will be arranged for one afternoon of each week. These will be on topics of interest to all. Excursions will be arranged for every Wednesday afternoon, and more extended excursions for the whole school will be planned for every Saturday. The excursions



THE DINING HALL

sions will be in charge of an instructor as heretofore. In the past they have proved a very enjoyable feature of the work.

Round table and special discussions will be arranged by various instructors as their courses require. A conference of rural social workers and educators of New England will be held July 29 to August 2. An outline of the conference will be found in another part of this bulletin.

A boys' camp, demonstrating proper methods of conducting such work, will be held July 16—23, inclusive.

A course of evening lectures on popular topics relating to the work of the school will be a feature of the general program. Several able lecturers have already been engaged for this course. Like everything else connected with the Summer School, this lecture course is entirely free to all students.



## COLLEGE EQUIPMENT

The Massachusetts Agricultural College is endowed by the Federal government and by the State of Massachusetts for teaching and investigation in agriculture in the broadest sense. The College has a farm of over 500 acres in a high state of cultivation, and illustrates all the leading agricultural industries of Massachusetts and some of the best agricultural specialties. There is a large new range of greenhouses of the most modern and approved type just completed within the past year; there is a modern dairy barn with dairy cattle; there are good horses, pure-bred swine, sheep and poultry;



THE COLLEGE BARNS

there are fields of corn, potatoes, clover and grass in season; orchards of apple, peach, plum and pear trees; tracts of good forest land, nurseries, market gardens, greenhouses, etc. A good school garden, maintained by co-operation between the College and the Amherst schools, will be in operation. There are also considerable tracts devoted to experiments, many of which are of unusual interest. Then there are well-equipped departments of botany, entomology and chemistry, dealing in the most thorough manner with these special sciences. All of this equipment (much more than can be described or even named) will be placed at the service of the Summer School.

## ELECTION OF COURSES

Election of courses should be made at the time of registration. Every election is subject to the approval of the Director and of the instructor whose course is elected. As it will be necessary to schedule several courses at the same time, certain combinations of courses will be made unavailable. It should be specially noticed that certain courses are offered to a limited number of pupils only, and as a rule pupils will be accepted in these courses in the order of application. Each pupil should choose such combinations of courses as will keep two or three subjects in hand at the same time. This will meet the requirement that each one must take at least ten and not more than fifteen exercises a week, unless permitted to take more or less by special order of the Director.

## REGISTRATION, ATTENDANCE, ETC.

Those who expect to attend should register as early as possible. *Registration fee for the Summer School is \$5, payable at the time application is made. Registration fee for the clergymen attending the courses and conferences given especially for them is \$1.* No other tuition is charged. These fees should accompany application blanks and should be made payable to the Director of the Summer School, or the College Treasurer. A schedule and registration blank are to be found in the back part of this bulletin. Registration fees will be refunded to those who find it impossible to attend the school.

Attendance will be required in the courses elected. Some sort of examination, test or permanent note book will be required in each course. Those who complete courses in a satisfactory manner, including practically perfect attendance, will be given certificates at the close of the term showing what work has thus been completed.

There are no rules or regulations. Persons are not admitted to the Summer School who are not old enough to know how to conduct themselves, and everyone is expected to know and conform to the usages of good society. This absence of rules has worked admirably in the past, and it gives everyone a sense of freedom based on personal responsibility, the basis of all proper government, whether in school, college or the community.

TUITION IS ABSOLUTELY FREE, and there are no incidental charges. The College is supported by the State and the Federal governments, and receives no payments whatever from Summer School pupils except for room, board, and the registration fee, as mentioned above.

## ROOMS AND BOARD

Rooms will be provided in the College dormitories and in private houses adjoining the College grounds. In general, the dormitory rooms are in suites of two bedrooms, opening into one study room, the bedrooms furnished with single beds. These rooms are nearly all located in two dormi-



THE NORTH DORMITORY

tories known as North College and South College. The toilet and bathrooms are in the basements and water is not provided in the rooms. While the appointments in general are not those of a high-priced summer hotel, they are sanitary and comfortable, and have been found pleasant to men students for many years and by

the women students of the Summer School during four summers. A uniform rate of \$1.25 a week for each person will be charged for these rooms, and each pupil will be expected to supply her own blankets, sheets, pillow cases, towels and napkins. Convenient arrangements for laundry work may be made in Amherst.

The dormitories are reserved for women students exclusively.

**All requests for dormitory rooms must be made to, and rooms will be assigned by the College Treasurer. A deposit of \$2.00 is required in order to have a room in a dormitory reserved. This deposit is not refunded to those who find it impossible to attend.**

The College will also supply a small number of first-class United States army wall tents for those who wish them. Each tent will accommodate two persons. The tents will be placed in a pleasant and convenient location on the College campus, and every reasonable provision will be made for the comfort of the occupants. This form of domicile has been found very acceptable in other summer schools, chatauquas and camps. Those who care for real outdoor life at its best will find these arrangements genuinely enjoyable. The charge for these tents will be \$1 a week for each person.

Rooms outside the College vary considerably in their accommodations and somewhat in price, the charge ranging from \$1.50 to \$2.50 a week for each person. **A few days prior to the opening of the Summer School**

the College will make a canvass of the village in order to obtain a list of available rooms. This will be furnished Summer School students at the time of registration. Every effort will be made by those in charge to see that everyone has comfortable accommodations.

As far as possible, everyone who registers at the Summer School will be allowed to select his or her own room, either in the College dormitories or outside, and such selections will be offered strictly in the order of registra-



OFF FOR A TROLLY EXCURSION

tion. The Summer School management, however, reserves the right to make such shifts and readjustments as may be necessary for the greater convenience and comfort of all.

Excellent meals are served in Draper Hall, on the College grounds. Meals will be served on an à la carte basis at very low cost and should not amount to more than \$4.00 or \$4.50 a week. Good boarding places can be secured outside the College if desired.

## **ATHLETICS AND RECREATION**

Athletics and sports of various kinds occupy a prominent place in the Summer School. Tennis tournaments for both men and women and baseball teams are organized. Contests with teams from nearby towns are held, subject to the approval of the proper committee. This year, under competent supervision, demonstrations of organized play, recreation, folk dancing, and so forth will be given. Late afternoon and early evening periods will be used for this purpose.

The region around Amherst is especially rich in attractive places for tramping, excursions and picnics.

The management of the Summer School usually arranges plenty of these forms of recreation.

## **EVENING LECTURES AND SOCIAL LIFE**

The management of the Summer School provides at least one evening lecture each week. These lectures are usually given by men of international reputation, and deal with practical, social and economic subjects related to rural life.

One or two social evenings are arranged for each week. This, together with evening lectures, the regularly scheduled Wednesday and Saturday excursions, the afternoon field trips for study, make life at the Summer School extremely enjoyable as well as profitable. These social evenings are under the direction of a committee of the faculty, working with the Summer School students.

## **CHAPEL AND VESPERS**

Chapel exercises, fifteen minutes in length, are held each morning in the College chapel. At this time announcements for the day are given.

Vespers are held each Sunday afternoon at 5 o'clock, usually out-of-doors. Well-known preachers and other religious workers are engaged for these services, and special music is provided.

## **THE REGION SURROUNDING AMHERST**

Amherst is one of the most delightful towns in New England, and has long been noted for the natural scenic beauties surrounding it, and as an educational center. It is located in the heart of the Connecticut valley. The Holyoke range, Mt. Tom, Mt. Holyoke, Mt. Toby, the Orient, the Connecticut River, Rattlesnake Gutter, Whately Glen, Old Deerfield, and other places of great scenic beauty and historic interest are within easy walking, trolley or driving distance. The Berkshire and Hampshire Hills country is easily accessible.

The climate is good and usually not excessively warm during the Summer School.

The surroundings of the Summer School, its organization and methods of work, are such as to make a stay of two to four weeks enjoyable in every way. It furnishes the pleasantest sort of outdoor life, with just enough of work and recreation, under the simplest possible organization. From the first, special attention has been given to the outdoor exercises and recreation features of the program, and these will be still further emphasized in 1913. The whole atmosphere of the place is such that a vacation spent at the Summer School, with moderate work, is more interesting and refreshing than the same time spent at a seaside or mountain resort.

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1. To interest boys in agriculture and rural life.
2. To impress on the boy his responsibilities as a member of society.
3. To teach these boys clean, wholesome sports, recreation and proper spirit in competitive contest.
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The camp will be under military discipline. The daily program will consist of instruction in agriculture, hygiene, citizenship, etc., each forenoon. The afternoon will be given over to organized play, recreation, games, tramps through the hills, evening camp fires, etc., all managed and directed by experts.

Shelter will be provided by tents. Meals will be furnished at the College dining hall.

The camp will be limited to seventy-five boys, reservations being made for five from each county in the state before others are taken in. The system of selecting these boys from each county will be determined later.

Boys between the ages of twelve and seventeen will be admitted.

Boys will be received on the afternoon of July 16 and are expected to leave by noon July 23. One change of outer clothing, necessary under-clothing, blankets and towels must be brought by each boy.

Seven dollars will be charged each boy for the week. This will be used to defray cost of maintaining the camp, board, instruction and supervision.

Requests for registration should be made before June 15.

A descriptive circular explaining in full detail this boys' camp will be ready May 15, and can be had by writing the Director of the Summer School.

## CONFERENCE OF RURAL COMMUNITY LEADERS

JULY 29—AUGUST 2.

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The following organizations have promised to co-operate with the College by furnishing teachers and lecturers for their respective sections :

The Federation of Churches of Massachusetts ; The State Board of Education ; The Free Public Library Commission ; The Massachusetts Civic League ; The State Board of Health ; The County Work of the Young Men's Christian Association ; The National Board of the Young Women's



ORGANIZED PLAY, 1912 CONFERENCE

Christian Association ; The New England Home Economic Association ; The Russell Sage Foundation and The State Grange.

Definite class instruction will be given each morning. The afternoons will be given up entirely to special and general conferences on what seem to be the most important subjects in our rural life, demonstrations of organized play, recreation, etc. The evenings will be given over to music and lectures by the most eminent men who are making a study of rural sociology, economics and education.

The Rural Social Service exhibits will be more elaborate and extensive than in 1912.

The object of this conference is to acquaint those who are leaders in their respective communities with the work that is going on, not only in Massachusetts, but in New England and other parts of the world, and to give them renewed inspiration and enthusiasm for larger and more intelligent efforts.

Teachers, clergymen, grange officers, librarians, county Y. M. C. A. workers, town officers, boards of health, officers of village improvement societies, homemakers, school officers and all others interested in community development, are cordially invited to attend this Conference. The expenses for board and room are low. There are no tuition or registration fees.

A complete program will be published next June and can be had by making application for it to the Director of the Summer School.

### **Location of and Directions for Reaching Amherst**

Amherst is situated in the Connecticut valley, amidst fertile farms and surrounded by wooded hills. It is ninety-seven miles west of Boston and twenty-five miles from Springfield. It can be reached from Boston over the Boston and Maine Railroad (Southern Division from North Station) or by the Boston and Albany Railroad from South Terminal Station via Palmer, thence to Amherst over the Central Vermont Railroad.

It may also be reached from Springfield or Greenfield by the Boston and Maine Railroad via Northampton, or by trolley from Springfield via Holyoke or Northampton.

From New York, take New York, New Haven and Hartford Railroad to Springfield, then to Amherst by train or trolley as already stated.

Persons coming from Albany, Buffalo and the West would best come to Springfield and then to Amherst as stated above.

For information concerning the Summer School, write

WILLIAM D. HURD, Director,  
Massachusetts Agricultural College  
Amherst, Mass.



# Massachusetts Agricultural College

## SUMMER SCHOOL OF AGRICULTURE

### APPLICATION FOR REGISTRATION

Name (Mr., Mrs. or Miss).....

Post Office..... Street address.....

State..... Present occupation.....

Schools previously attended.....

Name of person to whom word may be sent  
in case of illness or accident.....

Address of above person.....

Reference.....

Consult the schedule and place an **X** after each course you wish to take.  
Send this blank to the Director.

- |   |   |
|---|---|
| Course.   | Course.   |
| 1. Soils, Tillage and Field Crops.                          | 20. Entomology.   |
| 2. Domestic Animals.  | 21. Beekeeping.   |
| 3. Modern Dairying.   | 22. Handicrafts and Practical Arts.                     |
| 4. Dairy Laboratory.  | 23. Home Economics for Rural and<br>Village Schools.    |
| 5. Poultry Breeding and Management.                         | 24. Home Economics.                                     |
| 6. Fruit Growing.   | 25. Household Science.                                  |
| 7. Practical Gardening.                                     | 26. Rural School Problems.                              |
| 8. Trees, Shrubs and Herbaceous<br>Perennials.              | 27. Home and School Gardens.                            |
| 9. Home Flower Growing.                                     | 28. School Hygiene and Recreation.                      |
| 10. Forestry.   | 29. Organized Play and Recreation,<br>Pageantry.        |
| 11. Landscape Gardening.                                    | 30. Practical Problems in New England<br>Agriculture.   |
| 12. Elementary Chemistry.                                   | 31. Economic Aspects of New England<br>Agriculture.     |
| 13. Agricultural Chemistry.                                 | 32. The Church and Rural Problem.                       |
| 14. Plant Experiments and School Dem-<br>stration Material. | 33. Sociological Aspects of New England<br>Agriculture. |
| 15. General Botany.   | 34. Rural Literature.                                   |
| 16. Cryptogamic Botany.                                     | 35. Rural Education.                                    |
| 17. Bird Life.  | 36. The Development of the Community.                   |
| 18. Insects and Disease.                                    |   |
| 19. Insect Life.  |   |

I wish to take.....weeks' work, beginning.....

Room preference (read bulletin carefully).....

Accepted.....

Director..

Date received .....

Fees .....

Ref. ....







Massachusetts Agricultural College Bulletin

THE EXTENSION SERVICE

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“ THE AMHERST MOVEMENT ”

# School for Rural Social Workers

In Connection with the Regular Summer School



AMHERST, MASS.

JULY 16--29, 1913

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Supplement to M. A. C. Bulletin, Vol. V., No. 3

Published six times a year by the Massachusetts Agricultural College, January, February, March, May, September and October.

Entered as second-class matter at the Postoffice, Amherst, Mass.

## ANNOUNCEMENT

For the fifth season the Massachusetts Agricultural College offers a School for Rural Social Workers, in connection with the usual Summer School of Agriculture and Country Life.

The social service spirit is abroad all over this country, and men are turning their attention to these subjects as never before. The courses offered this summer will give instruction, furnish information and direct the attention of those interested more particularly to the rural field, which has as yet received little systematic study, when compared with that which has been given city conditions.

This year more of a feature will be made of the group of courses given especially for those who might be classed as Rural Social Workers. These courses are intended for clergymen, teachers, librarians, town officers, grange workers and others who devote a considerable portion of their time to problems of community development. Courses 30 to 36 inclusive, as given in this bulletin, are designed for the needs of these persons. All other courses given during this period are also open to those who register.

From all of these courses a group of studies can be arranged which will present the rural problem from several standpoints, and will serve to show the relationships of the workers in the different lines to their respective fields and to the larger community problems which are constantly being presented to them.

## CALENDAR

Registration for regular Summer School,	-	-	-	June 30
Registration for School for Rural Social Workers,	-	-	-	July 15
Boys' camp,	-	-	-	July 16—23
Summer School ends,	-	-	-	July 29 (noon)
Conference of Rural Community Leaders,	-	-	-	July 29—Aug. 2

NOTE. This is not the complete bulletin of the Summer School, but a reprint from portions of it and a supplement to it. The complete bulletin may be obtained by writing the Director of the Summer School.

## SUMMER SCHOOL FACULTY

Kenyon L. Butterfield, LL. D. President of the College. Head of Division of Rural Social Science.

William D. Hurd, M. Agr. Director of The Extension Service.

Robert H. Bogue, B. Sc. Assistant in Chemistry.

Marion W. Borden. Assistant in Home Economics, Providence, R. I.

Alexander E. Cance, Ph.D. Associate Professor of Agricultural Economics.

Joseph Chamberlain, Ph.D. Associate Professor of Organic and Agricultural Chemistry.

William D. Clark, M. F. Professor of Forestry.

Laura Comstock. Extension Professor (elect) of Home Economics.

Samuel Coons. Instructor in Butter making.

Guy C. Crampton, Ph.D. Associate Professor of Entomology.

Elmer K. Eyerly, A. M. Associate Professor of Rural Sociology.

Burton N. Gates, Ph.D. Assistant Professor of Beekeeping.

- B. C. Georgia, B. Sc. Instructor in Market Gardening.  
 Harold M. Gore, M. A. C. '13. Assistant in Boys' Camp.  
 John C. Graham, B. Sc. Agr. Associate Professor of Poultry Husbandry.  
 Charles R. Green, B. Agr. Librarian.  
 F. Josephine Hall. Adviser for Women, Waltham, Mass.  
 William R. Hart, A. M. Professor of Agricultural Education.  
 Sidney B. Haskell, B. Sc. Associate Professor of Agronomy.  
 Curry S. Hicks, B. Sc. Assistant Professor of Physical Education and Hygiene.  
 George S. Holcomb, A. B., S. T. B. Lecturer in History.  
 William Chauncy Langdon. Expert in Pageantry, New York City.  
 William P. B. Lockwood, B. Sc. Agr. Associate Professor of Dairying.  
 Frederick A. McLaughlin, B. Sc. Assistant in Botany.  
 John A. McLean, A. B., B. Sc. Agr. Associate Professor of Animal Husbandry.  
 C. J. Maynard. Author and Lecturer on Bird Life, West Newton, Mass.  
 Orion A. Morton. Extension Professor of Agricultural Education.  
 E. L. Morgan, A. M. Community Field Agent.  
 A. Vincent Osmun, M. Sc. Assistant Professor of Botany.  
 Charles A. Peters, Ph. D. Associate Professor of Inorganic and Soil Chemistry.  
 Laura Post. Assistant in Physical Education, Wellesley College, Wellesley, Mass.  
 Edward Tallmadge Root. Secretary of the Federation of Churches of Massachusetts and Rhode Island, Boston.  
 Frederick W. Ried. Director of Practical Arts, State Normal and Training Schools, Framingham, Mass.  
 John A. Scheuerle. Formerly pastor of County Church, Hartford, Vt.  
 George E. Stone, Ph.D. Professor of Botany.  
 Frank A. Waugh, M. Sc. Head of Division of Horticulture and Professor of Landscape Gardening.  
 Edward A. White, B. S. Professor of Floriculture.

## THE COURSES OF STUDY

### Group G. Courses especially for Rural Social Workers,

30. *Practical Problems in New England Agriculture.* An outline of the agricultural situation in New England discussed from the standpoint of production. Such subjects as the soil and maintenance of fertility, economic use of commercial fertilizers, and the production of such staple crops as corn, potatoes and hay, under New England conditions, will be considered. Five lectures, third week. PROFESSOR HURD

31. *Economic Aspects of New England Agriculture.* A series of ten lectures on agriculture considered as an industry and on some of the immediate social and economic problems of the farmer. Some of the topics treated are: The characteristics of the agricultural industry; the relation of agriculture to other industries; the maintenance of the economic position of the farmer; the farmer and the market; co-operative endeavors; organization of the rural social forces. The lectures will deal in a very general and simple way with the problems of farm life, and are designed to give a

helpful viewpoint to teachers and leaders in rural communities. Five lectures a week second two weeks. PROFESSOR CANCE

**32. *The Church and Rural Problem.*** The church and its spiritual relationship to the community and the place the church and its pastor should take in the economic and industrial development of the community. The subjects will be divided by Mr. Root and Mr. Schuerle. Five lectures a week second two weeks. REV. EDWARD TALLMADGE ROOT AND MR. JOHN A. SCHUERLE.

**33. *Sociological Aspects of New England Agriculture.*** Personal qualities and social conditions necessary to successful co-operative endeavor ; the various forms of co-operative organizations viewed in their industrial, intellectual and moral aspects ; the influence of co-operation on the farmers' individualism, conservatism, self-help, thrift, contentment, and on agrarian legislation, scientific agriculture and farm labor ; the relation of co-operation to neighborhood life, to community pride and loyalty, to further associated effort, to class stability, solidarity and status ; the demand of co-operation for a new type of leadership, the relation of co-operation to socialism and the competitive system. Five lectures a week second two weeks.

PROFESSOR EYERLY

**34. *Rural Literature.*** A study of the literature, both prose and poetry, which interprets nature from the viewpoint of the lover of country life, and presents the idealistic side of agriculture and other rural pursuits. Five lectures a week for second two weeks.

PROFESSOR HOLCOMB

**35. *Community Co-operation in the Re-directing of the Rural and Village School.*** This course will include a brief history of the general development of the graded school, its advantages and disadvantages from the standpoint of the country school, present strong and weak phases, present trend, future possibilities, and the constructive assistance which the community may give in the work of re-direction. Five lectures, fourth week

PROFESSOR MORTON

**36. *The Development of the Community.*** A course dealing with the principles underlying progress in rural communities ; relation of community forces, ideals and leadership to progress ; principles of community control ; the community analysis ; the community progress program. Five lectures a week, second two weeks.

PROFESSOR MORGAN

## OTHER COURSES IN PROGRESS

During the period when the courses just mentioned are being given, several other courses in the Summer School will be in progress. These are also open to those who come for the two weeks only.

The following are the courses :

- Course No. 1. Soils and Tillage—Professor Haskell.  
 2. Domestic Animals—Professor McLean.  
 3. Modern Dairying—Professor Lockwood.  
 5. Poultry Breeding and Management—Professor Graham.  
 6. Fruit Growing—Professor Sears.  
 7. Practical Gardening—Mr. Georgia.



- Course No. 9. Home Flower Gardening—Professor White.
15. General Botany—Professor Osmun.
  16. Cryptogamic Botany—Professor Osmun.
  18. Insects and Diseases—Professor Crampton.
  19. Insect Life—Professor Crampton.
  20. Entomology—Professor Crampton.
  21. Beekeeping—Professor Gates.
  22. Practical Arts—Mr. Ried.
  24. Home Economics—Professor Comstock.
  25. Household Science—Professor Comstock.
  27. Home and School Gardens—Professor Morton.
  29. Organized Play and Recreation—Mr. Langdon.

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JULY 16 TO 23.

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1. To interest boys in agriculture and rural life.
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Requests for registration should be made before June 15.

A descriptive circular explaining in full detail this boys' camp will be ready May 15, and can be had by writing the Director of the Summer School.

Clergymen having boys in their parishes whom they would like to place in the camp for instruction should make early application.

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A complete program will be published next June and can be had by making application for it to the Director of the Summer School.

It is hoped that a large number of clergymen will attend this conference.

### **EXPENSES, ROOM, BOARD, REGISTRATION, ETC.**

There is no tuition charged in any of the Summer School courses. A registration fee of one dollar is paid by all clergymen attending the School for Rural Social Workers. To others the fee is five dollars, the same as for other students in the regular Summer School.

Board will be furnished on an à la carte plan at Draper Hall, the college dining hall. At the low prices charged, good board ought not to cost more than four or four fifty a week.

Rooms can be obtained in private houses in the village at a cost of one dollar and a half to three dollars a week. An effort will be made to secure the use of some of the college fraternity houses for Summer School students. These will be assigned to groups of persons interested in the same lines of work, so far as is possible.

## COLLEGE EQUIPMENT

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## Location of and Directions for Reaching Amherst

Amherst is situated in the Connecticut valley, amidst fertile farms and surrounded by wooded hills. It is ninety-seven miles west of Boston and twenty-five miles from Springfield. It can be reached from Boston over the Boston and Maine Railroad (Southern Division from North Station) or by the Boston and Albany Railroad from South Terminal Station via Palmer, thence to Amherst over the Central Vermont Railroad.

It may also be reached from Springfield or Greenfield by the Boston and Maine Railroad via Northampton, or by trolley from Springfield via Holyoke or Northampton.

From New York, take New York, New Haven and Hartford Railroad to Springfield, then to Amherst by train or trolley as already stated.

Persons coming from Albany, Buffalo and the West would best come to Springfield and then to Amherst as stated above.

For information concerning the Summer School, write

WILLIAM D. HURD, Director,  
Massachusetts Agricultural College  
Amherst, Mass.

# THE M. A. C. BULLETIN

AMHERST, MASS.

Vol. V. No. 4.

For May, 1913

## CATALOG

OF

# GRADUATES AND FORMER STUDENTS

OF THE

## MASSACHUSETTS AGRICULTURAL COLLEGE

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MASSACHUSETTS AGRICULTURAL COLLEGE  
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# CATALOG

OF

## Graduates and Former Students

OF THE

MASSACHUSETTS AGRICULTURAL COLLEGE

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PUBLISHED BY  
THE COLLEGE AND ASSOCIATE ALUMNI  
MAY, 1913

**T**HIS alumni address list has been compiled and is published under the direction of the Associate Alumni and the College. So far as can be ascertained, it is the only catalog of its kind that has ever been issued of the alumni and former students of the Massachusetts Agricultural College.

The usual class list is followed by a geographical index, and also by an alphabetical list of all graduates and former students. An earnest endeavor has been made to publish a list which is complete, accurate and up-to-date. The editors realize, however, that in all of these respects the catalog is defective.

It is hoped that a similar list may be published once in two or three years, and that the next edition may be more satisfactory than the first. To this end we invite all interested to co-operate with us in supplying information here omitted and in correcting noticeable errors.

PHILIP H. SMITH,  
Secretary of the Associate Alumni.

RALPH J. WATTS,  
Secretary to the President.

May 15, 1913.



## CLASS SECRETARIES

- 1871 E. E. Thompson, 5 Jacques Avenue, Worcester, Mass.
- 1872 F. E. Kimball, 8 John St., Worcester, Mass.
- 1873 C. Wellington, Amherst, Mass.
- 1874 D. G. Hitchcock, Warren, Mass.
- 1875 M. Bunker, Newton, Mass.
- 1876 C. Fred Deuel, Amherst, Mass.
- 1877 Atherton Clark, Newton, Mass.
- 1878 C. O. Lovell, 5 Bromfield St., Boston, Mass.
- 1879 R. W. Swan, 41 Pleasant St., Worcester, Mass.
- 1880 Alvan Fowler, 413 Post Office Building, Philadelphia, Pa.
- 1881 J. L. Hills, 50 North Prospect St., Burlington, Vt.
- 1882 G. D. Howe, 38 Whittier Ave., Springfield, Mass.
- 1883 J. B. Lindsey, Amherst, Mass.
- 1884
- 1885 E. W. Allen, 1923 Biltmore St., Washington, D. C.
- 1886 Dr. Winfield Ayres, 616 Madison Ave., New York City.
- 1887 F. H. Fowler, Shirley, Mass.
- 1888 H. C. Bliss, 14 Mechanic St., Attleborough, Mass.
- 1889 C. S. Crocker, 1003 South 25th St., Philadelphia, Pa.
- 1890 David Barry, 398 Walnut St., Newtonville, Mass.
- 1891 H. T. Shores, 177 Elm St., Northampton, Mass.
- 1892 H. M. Thomson, Amherst, Mass.
- 1893 F. A. Smith, Turner Hill, Ipswich, Mass.
- 1894 S. F. Howard, Amherst, Mass.
- 1895 E. A. White, Amherst, Mass.
- 1896 A. S. Kinney, South Hadley, Mass.
- 1897 C. A. Peters, Amherst, Mass.
- 1898
- 1899 C. A. Beaman, Rio Piedras, Porto Rico.
- 1900 E. K. Atkins, 15 Hubbard Ave., Northampton, Mass.
- 1901 J. H. Chickering, Dover, Mass.
- 1902 H. L. Knight, 1420 Buchanan St., Washington, D. C.
- 1903 G. D. Jones, North Amherst, Mass.
- 1904 P. F. Staples, North Grafton, Mass.
- 1905 A. D. Taylor, 1101 Tremont Building, Boston, Mass.
- 1906 Richard Wellington, Geneva, N. Y.
- 1907 Clinton King, 6 Beacon St., Boston, Mass.
- 1908 J. A. Hyslop, 860 North Mulberry St., Hagerstown, Md.
- 1909 O. B. Briggs, 1015 Fidelity Building, Baltimore, Md.
- 1910 F. L. Thomas, Amherst, Mass.
- 1911 L. M. Johnson, Newtown, Conn.
- 1912 F. S. Madison, East Greenwich, R. I.

## SECRETARIES OF ALUMNI ASSOCIATIONS

---

Alumni Secretaries Association of the Massachusetts Agricultural College.

Secretary—Ralph J. Watts, 1907, Amherst, Mass.

Associate Alumni of the Massachusetts Agricultural College.

Secretary—Philip H. Smith, 1897, Amherst, Mass.

Alumni Club of Massachusetts.

Clerk—H. Linwood White, 1909, 136 State House, Boston, Mass.

Connecticut Valley Association of the Massachusetts Agricultural College.

Secretary—Charles L. Brown, 1894, 870 State St., Springfield, Mass.

Massachusetts Agricultural College Club of New York.

Secretary—John Ashburton Cutter, 1882, 262 West 77th St., New York, N. Y.

Massachusetts Agricultural College Club of Washington, D. C.

Secretary—Clarence H. Griffin, 1904, 1864 Park Road, Washington, D. C.

Western Alumni Association of the Massachusetts Agricultural College.

Secretary—Charles A. Tirrell, 1906, 4012 Perry St., Chicago, Ill.

Massachusetts Agricultural College Pacific Coast Alumni Association.

Secretary—Thomas F. Hunt, 1905, Berkeley, Cal.

# MASSACHUSETTS AGRICULTURAL COLLEGE

## ADDRESS LIST

\* before the name denotes deceased.

† denotes not heard from in 1912.

1871

- E. E. THOMPSON, Secretary
- Allen, Gideon H., K Σ, 176 Court St., New Bedford, Mass., Accountant and Writer.
- Bassett, Andrew L., Q. T. V., 352 Decatur St., Brooklyn, N. Y. Business address, New Pier, 29 East River, N. Y., transfer agent Central Vermont Railroad Co.
- Birnie, William P., K Σ, 34 Stearns Terrace, Springfield, Mass., Manufacturer.
- Bowker, William H., Concord, Mass. Business address, 43 Chatham St., Boston, Mass., President Bowker Fertilizer Co., Trustee M. A. C.
- Caswell, Lilley B., Athol, Mass., Civil Engineer and Historian.
- Cowles, Homer L., Amherst, Mass., Farmer.
- †Ellsworth, Emory A., Q.T.V., 356 Dwight St., Holyoke, Mass., Architect and Civil Engineer.
- Fisher, Jabez F., KΣ, 73 Congress St., Fitchburg, Mass., Accountant.
- †Fuller, George E., Address unknown.
- \*Hawley, Frank W., died Oct. 28, 1883 at Belchertown, Mass.
- \*Herrick, Frederick St. C., D. G. K., died January 19, 1894, at Lawrence, Mass.

1871

- Leonard, George, D. K. G., 30 Avon Place, Springfield, Mass., Lawyer, Clerk of Courts; L. L. B.
- Lyman, Robert W., Φ K Φ, Q. T. V. 11 Linden St., Northampton, Mass., Lawyer. L. L. B., Boston University, 1878; L. L. M., Boston University, 1912.
- \*Morse, James H., died June 21, 1883, at Salem, Mass.
- Nichols, L. A., K Σ, 6054 Woodlawn Ave., Chicago, Ill., Consulting Engineer, President Chicago Steel Tape Co.
- Norcross, Arthur D., D. G. K., Monson, Mass., Retired.
- \*Page, Joel B., D. G. K., died August 23, 1902, at Conway, Mass.
- Richmond, S. H., Cutler, Dade Co., Florida. Business address, Box 128, Miami, Florida, Real Estate.
- Russell, William D., Φ K Φ, D. G. K., 353 West 85th St., New York City, Manufacturer.
- Smead, Edwin B., Q. T. V., P. O. Box 335, Hartford, Conn., Principal Watkinson Farm School.
- Sparrow, Lewis A., Northboro, Mass., Farmer.
- Strickland, George P., D. G. K., 3852 So. L. St., Tacoma, Wash., Loans and Farming.

1871

- Thompson, Edgar E., 5 Jaques Ave., Worcester, Mass., Supervising Principal Worcester Schools.
- \*Tucker, George H., died October 1, 1899, at Spring Creek, Pa.
- Ware, Willard C., Hamilton, Mass., Retired.
- Wheeler, William, Φ Κ Φ, Κ Σ, Concord, Mass. Business address, 14 Beacon St., Boston, Mass. Consulting Engineer. Trustee M. A. C.
- \*Whitney, Frank L., D. G. K., died July 15, 1912, at Harvard, Mass.
- Woolson, George C., Hastings-on-Hudson, N. Y. Business address, 1 Madison Ave., New York City, Nurseryman.

#### NON-GRADUATES

- †Barrows, William, Jr.
- †Bell, George H.
- \*Blunt, Charles E., died in 1903.
- Brainerd, John Wilson, Palmer, Mass.
- †Breck, Webster.
- Brown, Clarence E., 53 Center St., Northampton, Mass., Electroplater.
- \*Cary, William H., died about 1875.
- †Casey, Michael F.
- Cole, Daniel P., Springfield, Mass., Wholesale Paper Dealer.
- Crocker, Loring, Jr., 4 W. Cedar St., Boston, Mass., Broker.
- Eastman, George H., Storm Lake, Iowa, Accountant.
- Graves, George G., Amherst, Mass.
- Greene, William H., 418 Jefferson Ave., Pomona, Cal., Retired.
- Gunn, Charles B., 1002 N. Corona St., Colorado Springs, Colo., Passenger Conductor.
- †Hall, Frederick A.

1872

- †Hall, Lemuel W.
- †Howland, Charles M.
- †Hubbard, Frank A.
- †Kelleher, David W.
- King, Albert, 10 Belmont St., Taunton, Mass., Cashier, Taunton Ice Company.
- Luther, Gardiner C., 12 Sheldon St., Providence, R. I., Contractor.
- Miller, Henry Lewis, 12 Grinnell St., Greenfield, Mass., Retired.
- Nash, Edwin D., Bocas del Toro, Panama.
- Rankin, Austin B., Woonsocket, R. I., Wholesale Beef and Provision Dealer.
- \*Slattery, William, Jr., died July 22, 1899, at Northampton, Mass.
- Southwick, Alonzo, L., Blackstone, Mass.
- Swift, George A., 21 Craft St., Waltham, Mass., Retired.
- \*Wheeler, Charles A., died January, 1888, at Ouray, Colo.
- †Williams, Henry.

1872

- F. E. KIMBALL, Secretary
- Bell, Burleigh C., D. G. K., 289 8th St., San Francisco, Cal.
- Brett, William F., D. G. K., 40 Warren St., Dorchester, Mass., Retired.
- Clark, John W., Q. T. V., North Hadley Mass., Fruit Grower.
- Cowles, Frank C., 31 Grand St., Worcester, Mass., Civil Engineer.
- \*Cutter, John C., D. G. K., died February 2, 1909, at Worcester, Mass.
- \*Dyer, Edward N., died March 17, 1891, at Holliston, Mass.
- \*Easterbrook, Isaac H. died May 27, 1901, at Dudley, Mass.

1872.

- Fiske, Edward R., Q. T. V.,  
234 West Chelton Ave., German-  
town, Pa. Business address,  
625 Chestnut St., Philadelphia,  
Pa., Manufacturer.
- Flagg, Charles O., Q. T. V.,  
Hardwick, Mass., Supt. Page  
Demonstration Farms.
- Grover, Richard B., West  
Newbury, Mass., Clergyman.  
Andover Theological Seminary,  
1881.
- \*Holmes, Lemuel Le B., Q. T. V.,  
died August 4, 1897, at Matta-  
poisett, Mass.
- Howe, Edward G., 10233 So. Wood  
St., Chicago, Ill., Teacher in  
Chicago High School.
- Kimball, Francis E., 8 John St.,  
Worcester, Mass., Accountant.
- †Livermore, R. W., Q. T. V.,  
Red Springs, N. C.
- \*Mackie, George, Q. T. V., died  
August 31, 1906, at Attleboro,  
Mass.
- Maynard, Samuel T., Northboro,  
Mass., Fruit grower and Farmer.
- Morey, Herbert E., 34 Hillside  
Ave., Malden, Mass. Business  
address, 41 Washington St.,  
Boston, Mass., Numismatist and  
Philatelist.
- \*Peabody, William R., Q. T. V.,  
died June 28, 1908, at St. Louis,  
Mo.
- \*Salisbury, Frank B., D. G. K.,  
died 1895, at Mashonaland,  
Africa.
- Shaw, Elliot D., 130 Firglade Ave.  
Business address, 36 Main St.,  
Springfield, Mass., Real Estate.
- Snow, George H., Leominster,  
Mass., Farmer.
- \*Somers, Frederick M., Q. T. V.,  
died February 2, 1894, at  
Southampton, Eng.
- Thompson, Samuel C., Φ K Φ,  
Φ Σ K, 2348 Aqueduct Ave.,  
New York City, Civil Engineer.

1872

- \*Wells, Henry, Q. T. V., died  
September 19, 1907, at James-  
town, R. I.
- Whitney, William C., Q. T. V.,  
2574 4th Ave., South. Business  
address, 313 Nicollet Ave.,  
Minneapolis, Minn., Architect.

## NON-GRADUATES

- Bancroft, Jonathan F., R. F. D.  
No. 2, Nashua, N. H., Farmer.
- Barber, Strong Hayden, Windsor,  
Conn., Real Estate.
- Barker, Charles A., Jr., 2 Hubbard  
St., Concord, Mass.
- Brainerd, John W., Palmer, Mass.,  
Builder.
- Bullard, William E., Larchmont,  
N. Y., Physician.
- †Blood, Alonzo Hutchinson.
- †Chapman, Edward Brown.
- Cowls, Walter Dickinson, North  
Amherst, Mass. Farmer.
- Harrington, Frank Warner, Box  
567, Amherst, Mass., Farmer.
- †Kingman, William Hart.
- †Lester, Frank Harris.
- Lockey, John Morse, 69 West St.,  
Leominster, Mass., Piano Case  
Manufacturer.
- Morris, Frederick William, 542  
Fifth Ave., New York City,  
Bookseller.
- †Nash, Arthur Henry.
- Ober, Frederick Albion, Anderson  
St., Hackensack, N. J., Real  
Estate and Broker.
- †Penhallow, Charles Lowell.
- Swazey, Walter West, 25 Harrison  
Ave., Springfield, Mass. Home  
address, 43 Sherman St., Dentist
- Thomas, George Hutchins,  
R. F. D., No. 1, Leonard  
Bridge, Conn., Farmer.
- †Wills, John Wheelwright.

## 1873

- C. WELLINGTON, Secretary
- †Eldred, Frederick C., Sandwich, Mass., Cranberry Grower.
- Leland, Walter S., D. G. K., Concord Junction, Mass., Officer in Massachusetts Reformatory.
- \*Lyman, Asahel H., D. G. K., died January 16, 1896, at Manistee, Mich.
- Mills, George W., 60 Salem St., Medford, Mass., Physician. M. D., Harvard.
- Minor, John B., Φ K Φ, Q. T. V., New Britain, Conn., Manufacturer.
- \*Penhallow, David P., Q. T. V., died at sea, October, 1910.
- \*Renshaw, James B., Deceased.
- †Simpson, Henry B., Q. T. V., 902 Pennsylvania Ave., N. W., Washington, D. C.
- Wakefield, Albert T., Sheffield, Mass., Physician. M. D., Jefferson Medical College, 1878.
- Warner, Seth S., K Σ, Florence, Mass., Farmer.
- †Webb, James, H., Φ K Φ, K Σ, Hampden, Conn. Business address, 42 Church St., New Haven, Conn., Lawyer. Instructor in Yale University Law School; L. L. B., Yale, 1877.
- Wellington, Charles, Φ K Φ, K Σ, Amherst, Mass., Professor of Chemistry, M. A. C. Ph. D., Gottingen, Germany, 1885.
- †Wood, Frank W., Address unknown.

## NON-GRADUATES

- \*Avery, Frank Rhodes, died June 2, 1886.
- †Baker, Frederick William.
- Barrows, Fletcher Kneeland, 21 High St., Brattleboro, Vt., President Brattleboro Savings Bank.
- †Carter, Herbert Mason.

## 1874

- †Childs, William F.
- Clark, William J., 113 Franklin Ave., Salem, Ohio, Manufacturer.
- Cleland, William F., 95 West Central St., Natick, Mass., Merchant.
- Copp, Belton Allyn, Groton, Conn., Bank President.
- Flower, Archibald D., 20 Orchard St., Greenfield, Mass., Lawyer.
- †Frisbie, George B.
- †Furness, George A.
- †Garrett, William E.
- Healey, George Clifford, Hampton Falls, N. H., Farmer.
- †Johns, Frederick D.
- †Lathrop, Joseph D.
- †Lovell, Frank Kendall.
- †Mines, William Wales.
- †Peabody, William R.
- †Rowland, Charles W.
- Sanderson, Robert W., 573 Dwight St. Home Address, 136 Lincoln St., Holyoke, Mass. Grocer.
- †Smith, Jasper B.
- Warriner, Alfred Allen, Warren, Mass. Farmer.

## 1874

- D. G. HITCHCOCK, Secretary
- Benedict, John M., D. G. K., Woodbury, Conn. M. D., University of the City of New York, 1882. Retired.
- †Blanchard, William H., Address unknown.
- Chandler, Edward P., D. G. K., Rogue River, Ore., Fruit Grower.
- \*Curtis, Woolfred F., died November 18, 1878, at Westminster, Mass.
- \*Dickinson, Asa W., D. G. K., died November 8, 1899, at Easton, Pa.

1874

- Hitchcock, Daniel G., Warren, Mass., Insurance and Real Estate.
- †Hobbs, John A., Address unknown.
- Libbey, Edgar H.,  $\Phi$  K  $\Phi$ , Union Oil Building, Los Angeles, Cal., Agricultural Engineer.
- \*Lyman, Henry, died January 19, 1879, at Middlefield, Conn.
- Montague, Arthur H., South Hadley, Mass., Farmer.
- \*Phelps, Henry L., died March 3, 1900, at West Springfield, Mass.
- \*Smith, Frank S., D. G. K., died December 24, 1899, at Cleveland, Ohio.
- Woodman, Edward E.,  $\Phi$  K  $\Phi$ , Danvers, Mass., Florist.
- Zeller, Harrie McK, 910 Cedar St., R. F. D. No. 3, Hagerstown, Md., Fruit Grower and Gardener.

**NON-GRADUATES**

- Adams, Fred Edgar, 350 Fulton St., Brooklyn, N. Y. Home address, 1215 Herkimer St., Lumber Dealer.
- Alexander, Edward P., Jacksonville, Ill., Insurance.
- Barstow, William Hale, 35 Congress St., Boston, Mass. Home address, 35 College Ave., Medford. Treasurer American Loom Fixtures Company.
- †Briggs, Louis Willard.
- Clark, Wallis Olwyn, c/o American Legation, Guatemala, C. A. Retired Major, U. S. A.
- †Clark, William Avery.
- †Doubleday, Henry M.
- †Doubleday, William H.
- †Duncan, George Adams.
- †Fisk, Charles Abbott.
- †French, John Leavitt.
- Gillett, Edward, Southwick, Mass., Nurseryman.

1875

- †Jones, Arthur Clifford.
- \*Lyman, William, died December 20, 1896, at Middlefield, Conn.
- †Millard, David Knox.
- †Mitchell, William H.
- †Moody, George Frederick.
- †Ould, Remus.
- †Pearce, Walter Sloan.
- †Shaw, Charles Jacob.
- Smith, James Metcalf, 11 South Main St., Providence, R. I. Home address, 7 Parkis Ave. Steam and Water Heating Factory Superintendent.
- Strain, William, Mount Carmel Conn.
- †Towne, Frank Augustus.
- †Tucker, Charles E.
- †Wood, Frank Warren.
- Zeller, Bruce Scott, 120 W. Washington St., Hagerstown, Md. Home address, 502 Summit Ave. Real Estate.
- †Zeller, William M.

1875

**MADISON BUNKER, Secretary**

- Barrett, Joseph F.,  $\Phi$  K  $\Phi$ ,  $\Phi$   $\Sigma$  K, 60 Trinity Place, New York City, Fertilizer Business.
- Barri, John A., 346 Maple St., Springfield, Mass. Business address, Berkshire Mills, Bridgeport, Conn. Grain and Coal Dealer.
- Bragg, Everett B., Q. T. V., 1838 Chicago Ave., Evanston, Ill. Business address, 112 West Adams St., Chicago, Ill. Vice-President General Chemical Co.
- Brooks, William P.,  $\Phi$  K  $\Phi$ ,  $\Phi$   $\Sigma$  K. Amherst, Mass., Director Mass. Agricultural Experiment Station. Ph. D., Frederichs University, at Halle, Germany.

1875

- Bunker, Madison, Newton, Mass.,  
Veterinary Surgeon. D. V. S.,  
American Veterinary College,  
New York, 1881.
- †Callender, Thomas R., D. G. K.,  
Northfield, Mass., Farmer.
- Campbell, Frederick G., Φ Σ K,  
Putney, Vt., Farmer.
- Carruth, Herbert S., D. G. K.,  
Amherst, Mass., Retired.
- \*Clark, Zenos Y., Φ Σ K, died June  
4, 1889, at Amherst, Mass.
- \*Clay, Jabez W., Φ Σ K, died  
October 1, 1880, at New York  
City.
- Dodge, George R., Q. T. V.,  
South Hamilton, Mass., Farmer.
- Hague, Henry, Φ Σ K, 695 South-  
bridge St., Worcester, Mass.  
Clergyman.
- Harwood, Peter M. Φ Σ K, Barre,  
Mass. Business address, Room  
136, State House, Boston, Mass.  
General Agent, Mass. Dairy  
Bureau.
- \*Knapp, Walter H., Φ K Φ, died  
April 10, 1911, at Newtonville,  
Mass.
- Lee, Lauren K., 631 St. Anthony  
Ave. Business address, 205-206  
Dispatch Building, St. Paul,  
Minn. Advertising Agent.
- Miles, George M., 28 Lake St.,  
Miles City, Mont. Banker  
and Merchant.
- Otis, Harry P., K Σ, Florence,  
Mass., Manufacturer.
- Rice, Frank H., 710 Madison St.  
Business address, 1444 Broad-  
way, Oakland, Cal., Accountant.
- Southwick, Andre A., Φ Σ K, 355  
Tremont St., Taunton, Mass.,  
Farmer.
- Winchester, John F., Q. T. V.,  
39 East Haverhill St., Lawrence,  
Mass., Veterinarian. D. V. S.,  
American Veterinary College,  
New York, 1878.

1875

## NON-GRADUATES

- †Andrae, George C.
- †Ashton, John.
- Babbitt, George Henry, 340 Grove  
St., Chicopee Falls, Mass., with  
Phelps Publishing Co., Spring-  
field.
- †Chase, Edmund Taylor.
- †Deland, Thomas James.
- †Dix, James Quincy.
- †Ellis, Granville, Alden.
- †Frothingham, Thomas G.
- †Gibbs, Charles F.
- †Hatch, George Stanley.
- †Holmes, Harry Hawley.
- †Judkins, Arthur M.
- Jackson, Henry S., 516 Park Ave.,  
East Orange, N. J., Retired.]
- Kinsman, Willard F., Hayslope  
Farm, Ipswich, Mass., Farmer.
- †Merrill, James C.
- †Merrill, Nathaniel P.
- †Parker, Francis G.
- Peabody, Cecil H., 293 Common-  
wealth Ave., Boston, Mass.,  
Professor of Naval and Marine  
Engineering.
- †Platt, William D.
- †Player, Harry H.
- \*Reed, Freemont Sumner, died  
July 4, 1879, at South Wey-  
mouth, Mass.
- †Rotch, Caleb Lamb.
- †Snow, Laban.
- Stearns, Richard Sprague, 25  
Exchange Bldg., Boston, Mass.
- \*Taylor, Ralph Ives, Deceased.
- †Thomas, John Louis.
- †Vaill, William Henry.
- †Weeks, Herman F.
- †Youchi, Geamon.



## 1876

- C. FRED DEUEL, Secretary  
 †Bagley, David A., Address unknown.  
 Bellamy, John, D. G. K., West Newton, Mass. Business address, 134 Pearl St., Boston, Mass. Bookkeeper.  
 Chickering, Darius O., Enfield, Mass. Farmer.  
 Deuel, C. Fred, Φ K Φ, Q. T. V., Amherst, Mass., Druggist.  
 \*Guild, George W., Q. T. V., died May 8, 1903, at Jamaica Plain, Mass.  
 †Hawley, Joseph M., D. G. K., Address unknown.  
 \*Kendall, Hiram, D. G. K., died 1911, at East Greenwich, R. I.  
 Ladd, Thomas H., Address unknown.  
 †McConnell, Charles W., K Σ, 171 Fremont St., Boston, Mass., Dentist. D. D. S., Philadelphia Dental College, 1880.  
 Macleod, William A., Φ K Φ, D. G. K., Westwood, Mass. Business address, 350 Tremont Bldg., Boston, Mass., Lawyer. L. L. B., Boston University.  
 †Mann, George H., 68 Stoughton Ave., Readville, Mass., Engineer.  
 Martin, William E., Sioux Falls, S. D., Bookkeeper.  
 Parker, George A., Φ K Φ, Φ Σ K, 100 Blue Hills Ave. Business address, 49 Pearl St., Hartford, Conn., Supt. of Parks; Advisory City Forester of Hartford.  
 Parker, George L., 807 Washington St., Dorchester, Mass., Florist.  
 †Phelps, Charles H., Address unknown.  
 Porter, William H., Φ Σ K, Agawam, Mass., Farmer.  
 Potter, William S., D. G. K., 920 State St. Business address, 4 Wallace Bldg., Lafayette, Ind. Lawyer and Banker.

## 1876

- Root, Joseph E., Φ Σ K, 67 Pearl St., Hartford, Conn., Physician and Surgeon. M. D., College of Physicians and Surgeons, New York, 1883.  
 Sears, John M., Ashfield, Mass., Farmer.  
 \*Smith, Thomas E., D. G. K., died September 20, 1901, at West Chesterfield, Mass.  
 \*Taft, Cyrus A., died February 7, 1908, at Whitinsville, Mass.  
 \*Urner, George P., D. G. K., died April, 1897, at Wesley, Mont.  
 \*Wetmore, Howard G., D. G. K., died April 27, 1906, at New York City.  
 \*Williams, John E., died January 18, 1890, at Amherst, Mass.

## NON-GRADUATES

- †DePew, Richard Mather.  
 †Ellis, Edward Story.  
 †Graves, Louis Bertrand.  
 Jefts, Melvin Willard, Ashby, Mass., Farmer.  
 Judd, Charles A., South Hadley Falls, Mass., Farmer.  
 Lawton, Charles F., 12 Maple View Terrace, New Bedford, Mass., Supt. of Streets; City Forester.  
 Leach, Frank Harvey, 728 Main St., Worcester, Mass.  
 †Naito, Saitaro.  
 †Parker, Edward Herbert.  
 \*Perkins, William H., died in 1897, at Watertown, Mass.  
 †Preston, Edward George.  
 Robinson, John Albert, 11 Marion Road, Arlington, Mass., Retired.  
 †Rogers, Mulford T.  
 †Sanger, Frank Hyde.  
 Slade, Denison Rogers, Centre Harbor, N. H., Farmer.

1877

Spooner, Frank Adams, 104 Mount Auburn St., Watertown, Mass., Sales Manager.

Tucker, Fred Herman, 141 Essex St., Boston, Mass. Home address, 206 Church St., Newton. Wholesale Dry Goods.

1877

ATHERTON CLARK, Secretary

Benson, David H., Q. T. V., 419 Georgia St., Jacksonville, Fla.

†Brewer, Charles, Address unknown.

Clark, Atherton, Φ K Φ, K Σ, 231 Waverly Ave., Newton, Mass. Business address, 140 Tremont St., Boston, Mass., Merchant.

\*Dickinson, Walter M. Killed at Battle of El Caney, 1898.

\*Hibbard, Joseph R., died June 17, 1899, at Stoughton, Wis.

Howe, Waldo V., Q. T. V., Newburyport, Mass., Farmer.

Mills, James K., K Σ, Amherst, Mass., Photographer.

†Nye, George F., D.G.K., 420 East 42d St., Chicago, Ill.

\*Parker, Henry F., died December 21, 1897, at Brooklyn, N. Y.

†Porto, Raymundo M. Da, Φ Σ K, Address unknown.

\*Southmayd, John E., Φ Σ K, died December 11, 1878, at Minneapolis, Minn.

†Wyman, Joseph, 347 Massachusetts Ave., Arlington, Mass., Real Estate.

### NON-GRADUATES

\*Ball, Gilman K., died February, 1905.

Goodrich, Wilbur F., 324 Kimball Bldg., Boston, Mass. Home address, 10 Gibbens St., Somerville, Civil Engineer.

Gunn, William B., Southampton, Mass., Farmer.

1878

†Moore, Frank Lester.

†Paige, Harry Cruise.

†Palmer, Frank Waldo.

Pixley, Martin Shaw, 38 Sumner Ave., Springfield, Mass., Janitor.

†Smith, Frank Leland.

†Southworth, Charles H.

Urner, Frank Gordon, 173-175 Chambers St., New York City, Home address, Farmwood, N. J. Editor.

†Wilson, Alvin Robert.

†Wayesugi, Tall Katuyoshi.

1878

C. O. LOVELL, Secretary

Baker, David E., Φ Σ K, 227 Walnut St., Newtonville, Mass., Physician. M. D., Harvard.

\*Boutwell, W. L. died September 28, 1906, at Northampton, Mass.

Brigham, Arthur A., Φ Σ K, Brookings, S. D., Principal South Dakota, School of Agriculture. Ph. D., Gottingen, Germany, 1896.

\*Choate, Edward C., Q. T. V., died January 18, 1905, at Southboro, Mass.

\*Coburn, Charles F., Q. T. V., died December 26, 1901, at Lowell, Mass.

Foot, Sanford D., Q. T. V., 231 West 70th St., New York City, Manufacturer.

Hall, Josiah N, Φ h Φ, Φ Σ K, 1344 Elizabeth St. Business address, 452 Metropolitan Bldg., Denver, Colo. M. D., Harvard.

Howe, Charles S., ΦKΦ, ΦΣK, 11125 Bellflower Road, Cleveland, O., President Case School of Applied Science. Ph. D., Wooster University, 1887. D. Sc., Armour Institute, 1905; L. L. D., Mt. Union College, 1908.

1878

- Hubbard, Henry F., Q. T. V.,  
37 Elm Grove Ave., Providence,  
R. I. Business address, 26  
Custom House St., Providence,  
R. I., Tea Importer.
- Hunt, John F., 302 Ferry St.,  
Malden, Mass. Business address  
27 State St., Boston, Mass.,  
Building Superintendent.
- Lovell, Charles O., Q. T. V.,  
Watertown, Mass. Business  
address, 5 Bromfield St., Boston,  
Mass., Manufacturer.
- Lyman, Charles E., Middlefield,  
Mass., Farmer.
- †Myrick, Lockwood, Hommonton,  
N. J., Fruit Grower.
- †Osgood, Frederick H., Q. T. V.,  
50 Village St., Boston, Mass.
- \*Spofford, Amos L.  $\Phi \Sigma K$ , died in  
1911.
- Stockbridge, Horace E.,  $K \Sigma$ , 20  
South Forsythe St., Atlanta, Ga.,  
Editor Southern Ruralist, Ph. D.
- Tuckerman, Frederick, Q. T. V.,  
Amherst, Mass., Anatomist.  
M. D., Harvard, 1882; M. A.  
and Ph. D., University of  
Heidelberg, Germany, 1894.
- Washburn, John H.,  $K \Sigma$ , Farm  
School, Pa., Director National  
Farm School. Ph. D., Göttingen,  
Germany.
- Woodbury, Rufus P. Q. T. V.,  
Stock Yard Station, Kansas  
City, Mo., Secretary Kansas  
City Live Stock Exchange.

**NON-GRADUATES**

- †Allen, Mathew Joseph.  
Carneiro, Manuel Dias.
- †Collum, George Newell.
- \*Cooley, Silas Rose, died November  
13, 1901.
- †Humphrey, George E.  
Loomis, Francis Eugene, Lincoln  
Ave., Amherst, Mass., Farmer.

1879

- Morey, Guy, 63 Market St.,  
Lowell, Mass. Home ad-  
dress, 46 Mt. Washington St.,  
Assistant Treasurer.
- Nims, Luther, Mt. Holly, N. C.,  
Farmer and Manufacturer.
- Taylor, Henry Morgan, 6 Beacon  
St., Boston, Mass. Home ad-  
dress, 163 Tappan St., Brookline,  
Real Estate.

1879

- R. W. SWAN, Secretary
- Dickinson, Richard S., D. G. K.,  
Columbus, Neb., Banker.
- \*Green, Samuel B.,  $K \Sigma$ , died July  
11, 1910, at St. Anthony Park,  
Minn.
- †Rudolph, Charles, Q. T. V.,  
Address unknown.
- Sherman, Walter A., D. G. K.,  
214 Pawtucket St. Business  
address, 340 Central St., Lowell,  
Mass., Veterinary Surgeon. D.  
V. S., American Veterinary  
College, 1883; M. D., Long  
Island Medical College.
- Smith, George P.,  $K \Sigma$ , Sunderland,  
Mass., Farmer.
- †Swan, Roscoe W., D. G. K., M. D.,  
41 Pleasant St., Worcester,  
Mass., Physician.
- Waldron, Hiram E. B., Q. T. V.,  
112 Highland St., Hyde Park,  
Mass., Real Estate and Insurance.

**NON-GRADUATES**

- †Baker, Martin.
- Bass, Edward Little, Bethel, Vt.,  
Lumber dealer.
- Campbell, Charles H., 510 Fourth  
Ave., N., Great Falls, Mont.,  
Loans and Land Investments.
- Chittenden, Edgar W., Bridgeport,  
Conn., Fertilizer Business.
- †Cook, Roland C.

1880

- Howard, Joseph C., West Bridge-water, Mass.  
 †Hunt, Elisha Hubbard.  
 †Knox, Reuben.  
 †Lincoln, Joseph G.  
 †Palmer, Coddington B.  
 †Wadley, George Dole.

1880

A. L. FOWLER, Secretary.

- Fowler, Alvan L.,  $\Phi \Sigma K$ , Haddonfield, N. J. Business address, 413 P. O. Bldg., Philadelphia, Pa. National Bank Examiner.  
 †Gladwin, Frederick E.,  $\Phi \Sigma K$ , Box 190, Burbank, Cal.  
 Lee, William G., D. G. K., 1408 Twelfth St. Business address, Forum Bldg., Sacramento, Cal. Draftsman.  
 †McQueen, Charles M.,  $\Phi \Sigma K$ , address unknown.  
 Parker, William C.,  $\Phi \Sigma K$ , 158 Huntington Ave. Business address, 294 Washington St., Boston, Mass. L. L. B. Lawyer.  
 †Ripley, George A., Q. T. V., Greendale, Mass., Market Gardener.  
 Stone, Almon H., Wareham, Mass. Farmer.

**NON-GRADUATES**

- †Atwood, Horace Wood.  
 Bristol, Edwin F., Ascutneyville, Vt., Farmer.  
 †Carey, Willis Washburn.  
 †Endicott, George.  
 Hall, Alfred S., 312 Malden St., Revere, Mass., Market Gardener.  
 †Mattocks, Euao Edward.  
 †Pease, Charles Truman.  
 †Stewart, William Clark.

1881

- Townsley, Herbert M., Canton, N. Y., Civil Engineer.  
 †Warner, William E.  
 †Wing, Edgar Russell.  
 †Wood, Lewis.  
 Zabriskie, Frank H., Greenfield, Mass., Physician.

1881

J. L. HILLS, Secretary

- Bowman, Charles A., C. S. C., 725 Astrom Ave., Syracuse, N. Y. Business address, 514 Dillaye Bldg., Syracuse, N. Y. Civil Engineer.  
 \*Boynton, Charles E., M. D., died at Los Banos, Cal.  
 †Carr, W. Frank, Q. T. V., 116 Thirty-second St., Milwaukee, Wis., Manufacturer and Engineer. C. E. Massachusetts Institute of Technology, 1884.  
 Chapin, Henry E., A  $\Sigma \Phi$ , 49 Lefferts Ave., Richmond Hill, New York City, Teacher of Biology and Physiology, M. Sc., Michigan Agricultural College, 1893; D. Sc., McKendree College, 1908.  
 Fairfield, Frank H., Q. T. V., 153 Fourth Ave., East Orange, N. J., Chemist.  
 \*Flint, Charles L., Q. T. V., died June, 1904.  
 \*Hashiguchi, Boonzo, D. G. K., died August 12, 1903, at Tokio, Japan.  
 Hills, Joseph L.,  $\Phi K \Phi$ , K  $\Sigma$ , 59 North Prospect St., Burlington, Vt., Dean, Department of Agriculture, University of Vermont, Director Vermont Agricultural Experiment Station. D. Sc., Rutgers College.  
 Howe, Elmer D.,  $\Phi \Sigma K$ , Marlboro, Mass., Dairy Farmer, Trustee M. A. C.

1881

- Peters, Austin, Q. T. V., Harvard, Mass., Farmer. D. V. S., American Veterinary College, New York, 1883; M. R. C. V. S., London, England.
- Rawson, Edward B., D. G. K., 11 Clifton Place, Brooklyn, N. Y. Business address, 226 East 16th St., New York City. Supt. Friends' School. Pd. M., New York University.
- Smith, Hiram F. M., 115 South Main St., Orange, Mass., Physician. M. D., Harvard, 1885.
- †Spalding, Abel W. C. S. C., 422 Globe Block, Seattle, Wash., Architect.
- Taylor, Frederick P., D. G. K., Athens, Tenn., Farmer.
- \*Warner, Clarence D., D. G. K., died October 16, 1905, at Kimmswick, Mo.
- \*Whittaker, Arthur, D. G. K., died March, 1906, at Needham, Mass.
- \*Wilcox, Henry H., D. G. K., died January 11, 1899, at Honolulu.
- Young, Charles E.,  $\Phi \Sigma K$ , Columbia, S. C., Physician. M. D., University of the City of New York, 1882.

**NON-GRADUATES**

- Brooks, William Cummings, Freedom, N. H., Civil Engineer and Farmer.
- Clark, Wallae V., Malden, Mass Postal Superintendent.
- †Courtney, Matthew.
- †Hall, Albert C.
- †Hobbs, John Folsom.
- \*Howe, Winslow Brigham, died in 1911.
- †McKanna, James P.
- Perry, Alfred Dwight, 154 Vernon St., Worcester, Mass., Milk Dealer.

1882

- Sattler, Herman C., Norfolk, Neb., Dealer in Agricultural Implements.
- Smith, Benjamin S., 32 Nassau St., New York, City.
- Smith, John Leland, Barre, Mass., Farmer.
- †Wolfe, Walter Madson.
- Wood, Wilbur. E. 2803 4th Ave., Spokane, Wash.

**1882**

G. D. HOWE, Secretary

- Allen, Francis, S. C. S. C., 221 Main St., Nashua, N. H., Veterinary Surgeon. D. V. S., American Veterinary College, New York 1884; M. D., New York University, 1886.
- Aplin, George T., Q. T. V., East Putney, Vt., Farmer.
- Beach, C. Edward, D. G. K., West Hartford, Conn., Farmer.
- \*Bingham, Eugene P., C. S. C., died March 31, 1904, at Los Angeles, Cal.
- Bishop, William H.,  $\Phi \Sigma K$ , Farm School, Pa., Professor of Agriculture, National Farm School.
- \*Brodts, Harry S., Q. T. V., died December, 1906, at Rawlins, Wyo.
- Chandler, Everett S., C. S. C., North Judson, Ind., R. F. D. No. 3, Clergyman and Farmer. LL. B., Harvard, 1885; B. D., Chicago Theological Seminary, 1890.
- Cooper, James W., D. G. K., 142 Court St., Plymouth, Mass., Pharmacist.
- Cutter, John A.,  $\Phi \Sigma K$ , 262 West 77th St., New York City, Physician. M. D., Albany Medical College, 1886.

1882

- Damon, Samuel C., C. S. C., Kingston, R. I., Assistant in Agronomy, Rhode Island Agricultural Experiment Station.
- \*Floyd, Charles W., died October 10, 1883, at Dorchester, Mass.
- Goodale, David, Q. T. V., Marlboro, Mass., Farmer.
- Hillman, Charles D.,  $\Phi \Sigma K$ , Watsonville, Cal., R. F. D., No. 2, Nurseryman.
- \*Howard, Joseph H., died February 13, 1889, at Minnsela, S. D.
- Howe, George D., 38 Whittier Ave., Springfield, Mass., Salesman.
- Jones, Frank W., Q. T. V., Norwell, Mass. Business address, Assinippi, Mass. Teacher.
- Kingman, Morris B., Amherst, Mass., Florist.
- Kinney, Burton A.,  $\Phi \Sigma K$ , 98 Bleachery St., Lowell, Mass. Business address, 94 Essex St., Boston, Mass. Manufacturer.
- May, Frederick G.,  $\Phi \Sigma K$ , Groton, Mass., Farmer.
- Morse, William A., Q. T. V., 15 Auburn St., Melrose Highlands, Mass. Business address, 111 Devonshire St., Boston, Mass., Secretary.
- Myrick, Herbert, 115 Bowdoin St. Business address, Myrick Bldg., Springfield, Mass., Editor, Author, and Publisher.
- Paige, James B.,  $\Phi K \Phi$ , Q. T. V., Amherst, Mass., Professor of Veterinary Science, Massachusetts Agricultural College, Veterinarian, Massachusetts Agricultural Experiment Station. D. V. S., McGill University, 1888.
- Perkins, Dana E., 7 Salem St. Business address, Medford Sq., Medford, Mass. Civil Engineer

1882

- Plumb, Charles S., Q. T. V., 1980 Indianola Ave., Columbus, O., Professor of Animal Husbandry, Ohio State University.
- Shiverick, Asa F., 1310 Madison Park. Business address 33, Wabash Ave., Chicago, Ill., Merchant.
- Stone, Winthrop E., C. S. C., 146 North Grant St. West Lafayette, Ind., President Purdue University. Ph. D., Göttingen, Germany, 1888; LL. D., Michigan Agricultural College. 1907.
- Taft, Levi R.,  $\Phi K \Phi$ , C. S. C., Agricultural College, East Lansing, Mich., State Superintendent of Farmers' Institute.
- Taylor, Alfred H., D. G. K., Caldwell, Idaho, Farmer.
- \*Thurston, Wilbur H., died August, 1900, at Cape Nome, Alaska.
- Wilder, John E.,  $\Phi K \Phi$ ,  $K \Sigma$ , 1211 Hinman Ave., Evanston, Ill. Business address, 226-228 Lake St., Chicago, Ill., Tanner and Leather Merchant; Trustee Beloit College.
- Williams, James S., Q. T. V., Glastonbury, Ct., Manufacturer.
- Windsor, Joseph L., La Grange, Ill. Business address, 922 State Life Bldg., Indianapolis, Ind., Insurance and Engineering.

### NON-GRADUATES

- †Abercrombie, Fred Norman.
- Allen, George Dickinson, Vacaville, Cal., Fruit Grower.
- †Brown, Charles Henry.
- †Casparian, Gregory.
- †Chandler, Willard M., Clergyman.
- †Chase, Harry Kirk.
- Chipman, Frank E., 83-91 Francis St., Boston, Mass., Treasurer Boston Book Company.

1882

- Clarke, Henry Little, Andover, Mass., Physician.
- \*Clay, Cassius Morey, Deceased.
- Cochran, Robert A., Maysville, Ky., Manufacturer.
- Comins, William H., Hadley, Mass., Farmer.
- Crafts, George Eben, Bangor, Me., Paper Manufacturer.
- †Currier, George Francis.
- †Delano, Julio Joaquin.
- Deuel, Frank Dennis, Amherst, Mass.
- †Doyle, John J.
- †Dutton, Charles K.
- †Fish, Charles Sumner.
- Gowdy, Harry Morgan, Westfield, Mass.
- Harris, Louis Lincoln, Greenland, N. H., Clergyman.
- †Harris, Richard Brown.
- Hill, Charles Henry, 229 Chestnut St., Holyoke, Mass., Engineer.
- Holmes, Samuel Judd, 188 Park St., Montclair, N. J., Real Estate.
- Jackson, Andrew, Napa Soda Springs, Cal.
- \*Johnson, Frank Prescott, died October 30, 1903.
- Jones, Edward Spaulding, 116 Main St., Worcester, Mass. Home address, 5 Green Lane.
- Jones, Nathaniel Nelson, 817 Old South Bldg., Boston, Mass. Home address, 76 High St., Newburyport, Mass., Lawyer.
- Joyner, Frank Hall, 310 Palmetto Drive, Alhambra, Cal., Civil Engineer.
- Kenfield, Charles Robert, Holyoke, Mass.
- Knowles, William Francis, Jr., 220 Clarendon St., Boston, Mass. Physician.
- †Krauss, Alonzo Augustus.

1883

- \*Leonard, Arthur, died March 23, 1904.
- Lindsay, Frank B., Philmont, N. Y., Attorney.
- †Livermore, Nathaniel L.
- Luques, Edward C., 159 Main St., Biddeford, Me.
- †Manton, William James.
- Meade, William George, Springfield, Mass.
- \*Miller, Willie Smith, Deceased.
- Parsons, Howard Albert, North Amherst, Mass., Farmer.
- †Perkins, Charles B.
- †Platt, John Cheney.
- Putnam, Henry A., 6 Rock Ave., Worcester, Mass., Builder.
- †Rhodes, William H.
- †Smith, Herman Kellogg.
- \*Wheeler, Henry Lewis, died at Great Barrington, Mass.
- †Wheelock, Victor L.
- Willard, Daniel, Belvedere Hotel, Baltimore, Md., President Baltimore & Ohio R. R.
- †Wilmarth, Dr. Frederick A.

1883

J. B. LINDSEY, *Secretary*.

- †Bagley, Sidney C.,  $\Phi \Sigma K$ , 230 Tremont St., Melrose Highlands, Mass., Cigar Packer.
- Bishop, Edgar A., C. S. C., Peterboro, N. H., with American Guernsey Cattle Club.
- Braune, Domingos H., D. G. K., Pinheiro, Brazil, Professor of Agriculture, Government Agricultural College.
- Hevia, Alfred A.,  $\Phi \Sigma K$ , 71 Nassau St., New York City, Real Estate and Insurance.
- Holman, Samuel M., Q. T. V., 39 Pleasant St., Attleboro, Mass. Real Estate and Insurance.

1884

Lindsey, Joseph B.,  $\Phi K \Phi$ ,  $A \Sigma \Phi$ , Amherst, Mass., Vice-Director and Chemist, Massachusetts Agricultural Experiment Station; Goessmann Professor of Chemistry, Massachusetts Agricultural College. A. M. and Ph. D., Gottingen, Germany, 1891.

Minott, Charles W., C. S. C., Hudson, Mass., State Agent, Gypsy and Brown Tail Moth Suppression.

Nourse, David O., C. S. C., Newburg, N. Y., Farmer.

Preston, Charles H.,  $\Phi K \Phi$ ,  $K \Sigma$ , Hathorne, Mass., Farmer, Bank President, Trustee Massachusetts Agricultural College.

Wheeler, Homer J., C. S. C., 92 State St., Boston, Mass., Agricultural Expert for the American Agricultural Chemical Co.

### NON-GRADUATES

†Chaplin, John D. H.

†Conger, Charles T.

\*Fletcher, Frank H. Deceased.

Owen, Henry W., Amherst, Mass.

†Selden, John Lincoln.

†Smith, William E.

†Tryon, Charles Osmer.

1884

†Hermes, Charles, Q. T. V., address unknown.

†Holland, Harry D., Amherst, Mass., Merchant.

Jones, Elisha A.,  $\Phi \Sigma K$ , New Canaan, Conn., Farm Superintendent.

†Smith, Llewellyn, Q. T. V., address unknown.

1885

### NON-GRADUATES

†Brown, Henry Clinton.

†Dickinson, Howard W.

Dwight, Edwin Welles, 87 Milk St., Boston, Mass., Physician.

†Lublin, Alfred William.

Mayo, Walter Parker, South Framingham, Mass.

\*Redding, Merton Jay. Deceased.

Smith, William Henderson, 76 South Pleasant St., Amherst, Mass., Farmer.

†Smith William Ratcliffe.

1885

E. W. ALLEN, *Secretary.*

Allen, Edwin W.,  $\Phi K \Phi$ , C. S. C., 1923 Biltmore St., Washington, D. C., Assistant Director, Office of Experiment Stations, United States Department of Agriculture. Ph. D., Gottingen, Germany, 1890.

†Almeida, Luciano J. De, D. G. K., Cajurie Est Sao Paulo, Brazil, Surveyor.

Barber, George H., Q. T. V., U. S. Naval Hospital, Las Animas, Colo., Physician and Surgeon, U. S. Navy. M. D., College for Physicians and Surgeons, New York, 1888.

†Browne, Charles W.,  $\Phi K \Phi$ , Westboro, Mass.

Goldthwait, Joel E.,  $\Phi K \Phi$ , C. S. C., Hyde Park, Mass. Business address, 372 Marlborough St., Boston, Mass., Physician. M.D. College for Physicians and Surgeons, New York, 1888.

Howell, Hezekiah,  $\Phi \Sigma K$ , Washingtonville, Orange Co., New York, Retired.

\*Leary, Lewis C., died April 3, 1888, at Cambridge, Mass.



1886

Phelps, Charles S.,  $\Phi K \Phi$ ,  $K \Sigma$ ,  
Salisbury, Conn., Farmer.

Taylor, Isaac N., Jr.,  $K \Sigma$ , 670  
Eddy St., San Francisco, Cal.,  
Retired.

Tekirian, Benoni O., C. S. C.,  
201 West 118th St., New York.  
Business address, Grand and  
7th Sts., Hoboken, N. J.  
Merchant.

**NON-GRADUATES**

†Brooks, Paul C. P.

Buffington, Charles O., D. G. K.,  
Ware, Mass., Farmer and Mail  
Carrier.

†Chadbourne, Albert H.

\*Cutter, Charles Sumner, died  
August, 1909.

Day, William Lyman, Warren  
Mass., Farmer.

Dickinson, John F., 605 Atlantic  
Ave., Boston, Mass. Home  
address, Amherst.

†March, Wilbur Merriam.

†Nash, John Adams.

\*Nichols, Andrew, Jr. Deceased.

†Putnam, George Herbert.

†Spaulding, Charles Plumb.

†Spaulding, George Edwin.

Whittemore, Joseph Sidney, Leices-  
ter, Mass., Card Clothing Fin-  
isher.

†Woodhull, George Gouge.

1886

WINFIELD AYRES, *Secretary*.

†Ateshian, Oscar H., C. S. C.,  
Hotel San Remo, New York  
City, Merchant.

Atkins, William H., D. G. K.,  
Burnside, Conn., Florist.

1886

Ayres, Winfield,  $K \Sigma$ , Stamford,  
Conn. Business address, 616  
Madison Ave., New York City,  
Physician. M. D., Bellevue  
Hospital Medical College, 1893.

Carpenter, David F.,  $\Phi K \Phi$ ,  $K \Sigma$ ,  
Littleton, N. H., Superintendent  
of Schools.

Clapp, Charles W., C. S. C.,  
288 Main St., Greenfield, Mass.,  
Chief Engineer, Massachusetts  
Northern Railways.

Duncan, Richard F.,  $\Phi \Sigma K$ , M. D.,  
1236 Westminster St., Provid-  
ence R. I., Physician.

Eaton, William A., D. G. K.,  
Nyack, N. Y., Business address,  
1 Madison Ave., New York  
City, Lumber Dealer.

Felt, Charles F. W.,  $\Phi K \Phi$ , C. S. C.  
1020 Van Buren St., Topeka,  
Kans., Chief Engineer, Atchison,  
Topeka and Santa Fe Railroad.

MacKintosh, Richard B.,  $\Phi K \Phi$ ,  
D. G. K., 21 Aborn St., Peabody,  
Mass., with United Shoe Mach-  
inery Company.

Sanborn, Kingsbury,  $\Phi \Sigma K$ , River-  
side, Cal., Hydraulic Engineer.

Stone, George E.,  $\Phi K \Phi$ ,  $\Phi \Sigma K$ ,  
Amherst, Mass., Professor of  
Botany, Massachusetts Agri-  
cultural College; Plant Pathol-  
ogist Massachusetts Agricul-  
tural Experiment Station.  
Ph. D., Leipsic University,  
Germany, 1892.

Stone, George S., D. G. K., Otter  
River, Mass., Farmer.

**NON-GRADUATES**

†Barker, John King.

Bement, John Emery, Amherst,  
Mass., Foreman and Coal Deal-  
er.

Copeland, Alfred Bigelow, Russell,  
Mass., Manufacturer.

†Doucet, Walter Hobart.

1887

- Fowler, John Henry, Westfield, Mass., Market Gardener.  
 †Gaskill, Milo A.  
 †Kinney, Arno Lewis.  
 †Lang, Charles Joseph, Physician.  
 \*Leland, William Edwin, died December 1, 1901.  
 Palmer, Robert Manning, 405 Colman Bldg., Seattle, Wash., Banker.  
 \*Smith Walter Storm. Deceased.  
 Wheeler, George W., Deposit, N. Y., Veterinary Surgeon.  
 †Winslow, Edgar Daniel.

1887

F. H. FOWLER, *Secretary.*

- †Almeida, Augusto L., De, D. G. K., Rio Janeiro, Brazil.  
 Barrett, Edward W., D. G. K., -34 Washington St., Medford, Mass., Physician. M. D., Jefferson Medical College.  
 Caldwell, William H., K Σ, Peterboro, N. H., Farmer; Secretary and Treasurer, American Guernsey Cattle Club.  
 Carpenter, Frank B., Φ K Φ, C. S. C., 502 Hawthorne Ave., Business address, 11 South 12th St., Richmond, Va., Chief Chemist Virginia-Carolina Chemical Co.  
 Chase, William E., 11 East 60th St., North Portland, Ore., Farmer.  
 Davis, Frederick A. C. S. C., 223 Majestic Bldg., Denver, Colo., Physician. M. D., Harvard, 1891; A. M., Harvard, 1900.  
 Fisherdick, Cyrus W., C. S. C., Laplata, San Juan Co., New Mexico, Merchant and Rancher.

1887

- Flint, Edward R., Φ K Φ, Q. T. V., Gainesville, Fla., Professor of Chemistry. University of Florida; Ph. D., Gottingen, Germany; M. D. Harvard.  
 Fowler, Frederick H., Φ K Φ, C. S. C., Shirley, Mass., Clerk, Industrial School for Boys.  
 Howe, Clinton S., C. S. C., West Medway, Mass., Farmer.  
 Marsh, James M., C. S. C., Topsfield, Mass., President and Treasurer, George E. Marsh Co. Lynn.  
 Marshall, Charles L., D. G. K., Dedham, Mass., Florist and Gardener.  
 \*Meehan, Thomas F., D. G. K., died April 4, 1905, at Boston, Mass.  
 Osterhout, Jeremiah C., Chelmsford, Mass., Farmer.  
 Richardson, Evan F., Φ Σ K, Millis, Mass., Farmer, Lecturer State Grange.  
 Rideout, Henry N. W., Q. T. V., 7 Howe St., Winter Hill, Mass., Assistant Paymaster, B. & M. R. R.  
 Tolman, William N., Φ Σ K, 1401 Arch St., Philadelphia, Pa., Civil Engineer with United Gas Improvement Co.  
 †Torrelly, Firninoi Da S., D.G.K., Cidado de Rio Grande do Sud, Brazil.  
 Watson, Charles H., Q. T. V., 184 Summer St., Boston, Mass., Retired.

## NON-GRADUATES

- Allen, Frederick C., 150 North St., New York City.  
 †Avery, David Ebenezer.  
 †Ball, William Munroe.  
 Bond, Richard Henry, Box 26, Needham, Mass., Farmer.  
 †Breen, Timothy R.

1887

- Brown, Frederick W., 246 Summer St., Boston, Mass. Home address, Amherst, N. H. Directory compiler.
- Brown, Herbert Lewis, 30 Clement Ave., Peabody, Mass., Postal Service.
- Chapin, Clinton Gerdine, Chicopee, Mass., Farmer.
- Clarke, Frank Scripture, Hopedale, Mass., Clerk, Draper Co.
- Cushman, Ralph H., Bernardston, Mass., Farmer.
- †Daniels, Joseph Frank.
- †Hathaway, Bradford, O.
- †Kasmire, George Frank.
- †Long, Stephen Henry.
- †Martin, Joseph, 2d., Marblehead.
- †Merchant, Charles E.
- Merritt, Walter Heston, 174 High St., Springfield, Mass., Machinist.
- Nourse, Silas Johnson, 61 Dana St., West Haven, Conn., Bricklayer.
- Paine, Ansel Wass, 198 Bird Ave., Buffalo, N. Y. U. S. Immigrant Inspector.
- Robinson, George P., Q. T. V., Fair Oaks, Sacramento Co., Cal., President American Cannon and Water Co.
- Rose, Newton Augustus.
- Shaughnessy, John Joseph, 64 Fairmount St., Marlboro, Mass., Lawyer.
- †Stone, Fremont E.
- †Tucker, Frederick D. Clergyman.
- White, Herbert Judson, 145 Vine St., Hartford, Conn., Clergyman.

1888

- H. C. BLISS, *Secretary*.
- Belden, Edward H., C. S. C., 18 Park View St., Roxbury, Mass., with Edison Electric Illuminating Co. of Boston.

1888

- Bliss, Herbert C., K Σ, 14 Mechanic St. Business address, 191 North Main St., Attleboro, Mass., Manufacturing Jeweler.
- Brooks, Fred K., C. S. C., 36 Brockton Ave. Business address, 14 Washington St., Haverhill, Mass., Laundryman.
- Cooley, Fred S., Φ K Φ, Φ Σ K, Bozeman, Mont., Supervisor of Farmers' Institutes.
- Dickinson, Edwin H., C. S. C., North Amherst, Mass., Farmer.
- Field, Samuel H., C. S. C., North Hatfield, Mass., Farmer.
- Foster, Francis H., Andover, Mass., Civil Engineer and Farmer.
- Hayward, Albert I., C. S. C., Ashby, Mass., Farmer.
- Holt, Jonathan E., C. S. C., Andover, Mass., Agent.
- Kinney, Lorenzo F., Kingston, R. I., Commercial Horticulturist.
- Knapp, Edward E., K Σ, Glenside, Pa., in Mechanical Department, Atlantic Refining Company.
- †Mishima, Viscount Yataro, D. G. K., 5 Shinrudo, Azabuku, Japan.
- Moore, Robert B., Φ K Φ, C. S. C., 2520 South Cleveland St. Business address, 897 Drexel Bldg., Philadelphia, Pa., Superintendent with American Agricultural Chemical Company.
- †Newman, George E., Q. T. V., 287 North First St., San Jose, Cal.
- Noyes, Frank F., K Σ. 472 North Jackson St., Atlanta, Ga., Superintendent Electric Power Company.
- Parsons, Wilfred A., Φ Σ K, Southampton, Mass., Farmer.
- Rice, Thomas, D. G. K., 159 Maple St. Business address, 38 Pleasant St., Fall River, Mass., Journalist.

1889

Shepardson, William M., C. S. C., Middlebury, Conn., Landscape Gardener.

Shimer, Boyer L., Q. T. V., Mt. Airy Park, Bethlehem, Pa., Farmer and Real Estate.

### NON-GRADUATES

Ayer, Warren, Lawrence, Mass.

†Cutler, George W., Physician.

Dole, Edward Johnson, Chicopee, Mass.

Hinsdale, Rufus C., Greenfield, Mass.

Johnson, Irving H., 50 Woodland St., Newburyport, Mass., Teacher.

Loomis, Herbert R., North Amherst, Mass., Farmer.

Parker, James Southworth, Great Barrington, Mass.

Rogers, Howard Perry, 168 Cochituate St., Framingham, Mass., Veterinary Surgeon.

Smith, Willis P., Pasadena, Cal.

White, Henry Kirke, Whately, Mass.

Worthington, Alvan F., 8 Creda St., East Dedham, Mass. Insurance.

1889

C. S. CROCKER, Secretary

Blair, James R., Q. T. V., 158 Massachusetts Ave., Cambridge, Mass., Superintendent of C. Brigham Co., Milk Contractors.

\*Copeland, Arthur D., K Σ, died September 3, 1907, at Brockton, Mass.

Crocker, Charles S., K Σ, 1003 South 25th St., Philadelphia, Pa., Chemist with American Agricultural Chemical Company.

1889

Davis, Franklin W., Φ K Φ, Φ Σ K, 85 Colberg Ave., Roslindale, Mass., Journalist.

Hartwell, Burt L., Φ K Φ, C. S. C., Kingston, R. I., Chemist and Director, Rhode Island Agricultural Experiment Station, Professor of Agricultural Chemistry, Rhode Island State College. M. Sc., Massachusetts Agricultural College, 1900; Ph. D., University of Pennsylvania, 1903.

Hubbard, Dwight L., C. S. C., Billerica, Mass., Civil Engineer.

Hutchings, James T., Φ Σ K, 56 Averill Ave. Business address, 34 Clinton Ave., Rochester, N. Y., General Manager of Rochester Railway and Light Co.

\*Kellogg, William A., Φ Σ K died March 28, 1910, at Northampton, Mass.

Miles, Arthur L., C. S. C., 12 Magazine St., Cambridge, Mass. Dentist. D. D. S., Boston Dental College, 1898; D. M. D., Tufts College, 1909.

North, Mark N., Q. T. V., Windsor, Vt., Veterinarian.

Nourse, Arthur M., C. S. C., Westboro, Mass., Farmer.

Sellew, Robert P., Φ Σ K, 15 Glenville Ave., Alston. Business address, 7 Merchants Row, Boston, Sales Manager.

†Whitney, Charles A., C. S. C., Upton, Mass.

†Woodbury, Herbert E., C. S. C., 1512 North Delaware St., Indianapolis, Ind. M. D., Harvard, 1899.

### NON-GRADUATES

Adams, George Albert, Winchendon, Mass.

Alger, George Ward, West Bridgewater, Mass., Farmer.

1890

- Alger, Isaac, Jr., 247 Pleasant St., Attleboro, Mass. Farmer.  
 Colcord, Wallace R., Dover, Mass.  
 Huse, Frederick R., Winchester, Mass., Business.  
 Lumbard, Joseph E., 1925 Seventh Ave., Graham Court, New York City. Physician.  
 †Okami, Yoshiji, Tokio, Japan.  
 Smith, James Robert, Walpole, Mass.  
 Sprague, William Arnold, Chepachet, R. I.  
 Waite; Herbert Harold, Belchertown, Mass.  
 Wells, Charles Otis, Hatfield, Mass.  
 Wentworth, Elihu F., Canton, Mass.  
 White, Louis Allis, Whately, Mass.

1890

DAVID BARRY, Secretary

- Barry, David, Φ K Φ, Q. T. V., 398 Walnut St., Newtonville, Mass. Business address, 111 Devonshire St., Boston, Mass., Electrician.  
 \*Bliss, Clinton E., D. G. K., died August 24, 1894, at Attleboro, Mass.  
 \*Castro, Arthur De M., D. G. K., died May 2, 1894, at Juiz de Fora, Minas, Brazil.  
 Dickinson, Dwight W., Q. T. V., Watertown, Mass., Dentist. D. M. D., Harvard, 1895.  
 Felton, Truman P., C. S. C., West Berlin, Mass., Farmer.  
 Gregory, Edgar, C. S. C., Marblehead, Mass., Seedsman.  
 Haskins, Henri D., Q. T. V., Amherst, Mass., Asst. Chemist, Massachusetts Agricultural Experiment Station.

1890

- †Herreo, Jose M., D. G. K., Havana, Cuba, Editor.  
 Jones, Charles H., Φ K Φ, Q. T. V., 83 Brooks Ave., Burlington, Vt., Chemist Vermont Agricultural Experiment Station.  
 \*Loring, John S., D. G. K., died January 17, 1893, at Orlando, Fla.  
 McCloud, Albert C., Q. T. V., Amherst, Mass., Insurance and Real Estate.  
 Mossman, Fred W., C. S. C., Westminster, Mass., Farmer.  
 Russell, Henry L., D. G. K., Pawtucket, R. I., Secretary, Pawtucket Ice Company.  
 \*Simonds, George B., C. S. C., died July 19, 1909, at Fitchburg, Mass.  
 Smith, Frederick J., Φ K Φ, Q. T. V., Pierce Phosphate Company, Pierce, Polk Co., Fla., Chemist. M. Sc., Massachusetts Agricultural College, 1896.  
 †Stowe, Arthur N., Q. T. V., Hudson, Mass., Farmer.  
 Taft, Walter E., D. G. K., Berlin, N. H., Mechanical Engineer.  
 †Taylor, Frederick L., Q. T. V., 524 Warren St., Boston, Mass., Physician. M. D., Harvard, 1901.  
 \*West, John S., Q. T. V., died July 13, 1902, at Belchertown, Mass.  
 Williams, Frank O., Q. T. V., Sunderland, Mass., Farmer.
- NON-GRADUATES**
- Braman, Samuel Noyes, Wayland, Mass.  
 \*Coburn, Oscar Bennett, died November 15, 1889, at Weston, Mass.  
 †Frost, William Lawrence, Boston.

1891

- Fuller, Edward A., 170 Common St., Lawrence, Mass., Stable-keeper.
- Goddard, George A., Turners Falls, Mass.
- Hallet, Charles W., Barnstable, Mass., Machinist.
- Hogan, Frederick William, Greenville, N. Y.
- Maynard, John Bowen, Northampton, Mass.
- Pearson, George Cowing, Reading, Mass.
- Russell, Fred Newton, Sunderland, Mass.
- Stillings, L. Chamberlain, Medford, Mass. Physician.
- Stratton, Edward N., R. F. D. No. 1, Marlboro, Mass.
- Thayer, Bernard, Randolph, Mass.
- Whitcomb, Nahum H., Littleton, Mass., Farmer.
- Williams, Arthur S., Sunderland, Mass.

1891

H. T. SHORES, *Secretary.*

- Arnold, Frank L.,  $\Phi$   $\kappa$   $\Phi$ , Q. T. V., 32 School St., North Woburn, Mass., Chemist.
- \*Brown, Walter A., C. S. C., died January 18, 1910, at Springfield, Mass.
- Carpenter, Malcolm A., C. S. C., 33 High St., Greenfield, Mass., Landscape Gardener.
- †Eames, Aldice G.,  $\Phi$   $\Sigma$   $\kappa$ , North Wilmington, Mass., Journalist.
- Felt, E. Porter, C. S. C., Nassau, N. Y. Business address, State Educational Bldg., Albany, N. Y., State Entomologist. D. Sc., Cornell, 1894.
- †Field, Henry J., Q. T. V., Greenfield, Mass.

1891

- Gay, Willard W., D. G. K., New Rochelle, N. Y. Business address, 156 Fifth Ave., New York City, Landscape Gardener and Engineer.
- Horner, Louis F., C. S. C., San Gabriel, Cal., Landscape Architect.
- Howard, Henry M., C. S. C., 284 Fuller St., West Newton, Mass., Market Gardener.
- Hull, John B., Jr., D. G. K., Great Barrington, Mass., Coal Dealer.
- †Johnson, Charles H., D. G. K., 8 Harvard Ave., Dorchester, Mass., Electrical Engineer.
- †Lage, Oscar V. B., D. G. K., Juiz de Fora, Minas, Brazil.
- \*Legate, Howard N., D. G. K., died March 28, 1912, at Roxbury, Mass.
- Magill, Claude A., 59 Division St. Business address, 902 Chapel St., New Haven, Conn., General Manager Connecticut Hassam Paving Co.
- Paige, Walter C., D. G. K., Houston, Tex. General Secretary, Y. M. C. A.
- Ruggles, Murray, C. S. C., 25 School St., Milton, Mass., Superintendent Electric Works.
- Sawyer, Arthur H., Q. T. V., 131 North 16th St., East Orange, N. J., Cement Inspector.
- Shores, Harvey T.,  $\kappa$   $\Sigma$ , 177 Elm St., Northampton, Mass., Physician. M. D., Harvard, 1894.

## NON-GRADUATES

- Belden, Allan M., 104 Alden St., Springfield, Mass., Milk Dealer.
- †Bush, Edward, Boston.
- Davenport, Alfred M., 88 Grove St., Watertown, Mass.
- DuBois, Cornelius M., Essex, Mass.

1892

- Hull, Henry Banks, 219 Park St., New Haven, Conn., Shipring Clerk.
- \*Hurley, Michael E., died Jan. 10, 1899, at Amherst, Mass.
- †Palmer, Herbert W.
- Pond, William Hollis, North Attleboro, Mass.
- Russell, Edward E., 4 Hudson St., Worcester, Mass. Engineer.
- Sanderson, Harry Tilson, Leicester, Mass., with American Steel and Wire Co.
- Tuttle, Henry Fessenden, Westport, Conn.
- Wood, Augustus Roswell, Raymondville, Cameron Co., Texas.

1892

- H. M. THOMPSON, *Secretary*.
- Beals, Alfred T., Q. T. V., 159 East 33d St. Business address, 71 West 23d St., New York City, Photographer.
- Boynton, Walter I., Q. T. V., 73 Dartmouth St., Springfield, Mass. Business address, 310 Main St., Dentist. D. D. S., Boston Dental College, 1895.
- Clark, Edward T., C. S. C., Shirley, Mass., Farm Manager, Industrial School for Boys.
- †Crane, Henry E., C. S. C., Monroe Road, Quincy, Mass.
- Deuel, James E., Q. T. V., Amherst, Mass., Druggist. Ph. G., College of Pharmacy, Boston, Mass.
- Emerson, Henry B., C. S. C., 6 Central St., Methuen, Mass., Superintendent of Arlington Mills.
- Field, Judson L., Q. T. V., Oak Park, Ill. Business address, West Jackson Boulevard, Chicago, Ill., Director Jenkins, Kreer & Co.

1892

- †Fletcher, William, C. S. C., Chelmsford, Mass.
- Graham, Charles S., C. S. C., Holden, Mass., Farmer.
- Holland, Edward B.,  $\Phi K \Phi$ ,  $K \Sigma$ , Amherst, Mass., Associate Chemist, Massachusetts Agricultural Experiment Station. M. Sc., Massachusetts Agricultural College.
- Hubbard, Cyrus M., Q. T. V. Sunderland Mass. Farmer.
- Knight Jewell B. Q. T. V. Poona, India, Professor of Agriculture and Director Experiment Station, Poona College. M. Sc., Massachusetts Agricultural College, 1901.
- Lyman, Richard P., Q. T. V., East Lansing, Mich. Dean of Veterinary Division Michigan Agricultural College. M. D. V., Harvard, 1894.
- Plumb, Frank H., Q. T. V., Stafford Springs, Conn., Farmer.
- Rogers, Elliott,  $\Phi \Sigma K$ , Kennebunk, Me., Manufacturer.
- \*Smith, Robert H.,  $\Phi \Sigma K$ , died March 25, 1900, at Amherst, Mass.
- Stockbridge, Francis G.,  $\Phi K \Phi$ , D. G. K., Englishtown, N. J., Farmer.
- Taylor, George E.,  $\Phi K \Phi$ , Q. T. V., Shelburne, Mass., Farmer.
- Thomson, Henry M.,  $\Phi K \Phi$ , C. S. C., Amherst, Mass., Farmer.
- †West, Homer C., Q. T. V., Belchertown, Mass., Traveling Agent.
- Willard, George B.,  $\Phi \Sigma K$ , 14 Lafayette St., Waltham, Mass., City Treasurer and Collector of Taxes.
- Williams, Milton H., Q. T. V., Sunderland, Mass., Veterinarian. M. D. V., Harvard, 1894.

1892

**NON-GRADUATES**

- Baldus, Francis 119 Highland St., Brockton, Mass., Traveling Salesman.
- Bardin, James Edgar, Dalton, Mass., Farmer.
- Chamberlain, Pierce A., Northfield, Mass.
- Condit, Charles De Hart, Boonton, N. J. Farmer.
- Davidson, Royal Page, Highland Park, Ill.
- Eaton, Henry Newell, Gloucester, Mass.
- Faneuf, Arthur Gelis, 185 King St., Springfield, Mass., Machinist.
- Farrar, Frederick A., South Manchester, Conn., Hardware Dealer.
- Fowle, Samuel Osie, Needham, Mass., Veterinarian.
- Goldthwait, William J., 114 Elm St., Marblehead, Mass., Real Estate.
- Gorham, Frederick S., Westport, Conn.
- Haley, George W., 58 Main St., Stonington, Conn. Business.
- †Hoar, Thomas, Amherst, Mass.
- Howe, Elbridge Lewis, New Haven
- Lindsey, Ernest, Marblehead Mass.
- McDonald, Frederick J., Montreal, Canada.
- Nauss, Charles S., 118 Washington St., Gloucester, Mass., Lumber Dealer.
- Page, Harry Savage, South Orange, N. J.
- Saville, James R., Rockport, Mass.
- Sedgwick, Benjamin, Cornwall Hollow, Mass.
- †Stone, Harlan Fisk
- Tyng, Charles, Victoria, Texas.

1893

- Tyng, George McAlpine, Victoria, Texas.
- Weed, Wallace Dana, Marblehead, Mass.

1893

F. A. SMITH, *Secretary*.

- Baker, Joseph, Q. T. V., North Grosvenordale, Conn., Farmer.
- Bartlett, Frederick G., D. G. K., 298 Cabot St., Holyoke, Mass., Superintendent Forestdale Cemetery.
- Clark, Henry D., C. S. C., 69 High St., Fitchburg, Mass., Veterinarian. D. V. S., McGill University, 1895.
- †Curley, George F., Φ K Φ, C. S. C., 10 Congress St., Milford, Mass.
- Davis, Herbert C., Q. T. V., 45 West Cain St., Atlanta, Ga., Railway Postal Service.
- Goodrich, Charles A., D. G. K., 61 North Beacon St. Business address, 5 Haynes St., Hartford, Conn., Physician. M. D., College for Physicians and Surgeons, New York, 1896.
- Harlow, Francis T., Φ Σ K, Marshfield, Mass., Farmer.
- †Harlow, Harry J., K Σ, Shrewsbury, Mass., Farmer.
- †Hawks, Ernest A., C. S. C., address unknown.
- Henderson, Frank H., D. G. K., New Rochelle, N. Y. Business address, 11 East 24th St., New York City, Civil Engineer.
- Howard, Edwin C., Φ Σ K, Oliver Hazard Perry School, Boston, Mass., Teacher.
- †Hoyt, Franklin S., C. S. C., 44 Winthrop St., West Newton, Mass., Editor Educational Department, Houghton, Mifflin & Company. A. M., Columbia, 1904.



1893

- Lehnert, Eugene H.,  $\Phi K \Phi$ ,  $K \Sigma$ ,  
7 Franklin St., Northampton,  
Mass., Teacher.
- Melendy, A. Edward, Q. T. V.,  
11 Grant St., Wollaston, Mass.,  
Clerk C. and R. Department,  
U. S. Navy.
- Perry, John R., D. G. K., 1588  
Beacon St., Brookline, Mass.  
Business address, 101 Tremont  
St., Boston, Mass. Decorator  
and Painter.
- Smith, Cotton A., Q. T. V.,  
Los Angeles Athletic Club,  
Business address, 614 Trust and  
Savings Bldg., Los Angeles, Cal.,  
Real Estate. Ph. B., Sheffield  
Scientific School, 1894.
- Smith, Fred A., C. S. C., Turner  
Hill, Ipswich, Mass., Farm  
Superintendent.
- Smith, Luther W.,  $\Phi \Sigma K$ , Man-  
teno, Ill., Stock Farmer.
- Staples, Henry F., C. S. C.,  
8628 Wade Park Ave. Business  
address, 1020 Rose Bldg., Cleve-  
land, O., Physician. M. D.,  
Cleveland University of Medicine  
and Surgery, 1896.
- †Tinoco, Linz A. F., D. G. K.,  
Campos, Rio Janeiro, Brazil,  
Planter and Manufacturer.
- Walker, Edward J., C. S. C.,  
Boylston, Mass., Farmer.

## NON-GRADUATES

- \*Barrus, Sheridan Ezra, deceased.
- \*Green, Carlton Dewitt, died at  
Belchertown, January, 1892.
- †Gregory, James Howard, Fresno,  
U. S. Columbia, South America.
- \*Harvey, David Pearce, died in  
1891.
- Haskell, Ernest Albert, Amherst,  
Mass.
- Higgins, Nelson Francis, West-  
hampton, Mass.

1894

- Kellogg, John Hawkes, Hartford,  
Conn.
- Lane, William Arthur, Rockport,  
Mass.
- †Munro, David.
- Parker, Charles H., 9 Hawley St.,  
Worcester, Mass. Real Estate.
- \*Pember, Walter Stephen, died  
December 22, 1893.
- Poole, Jerome, Rockport, Conn.
- Ranney, William H., Derry Vil-  
lage, N. H., Superintendent,  
Hood Farm.
- Soule, George W., West Dedham,  
Mass.
- Wells, Louie Ensign, North Ash-  
ford, Conn., Farmer.
- \*Woodbrey, Gilpin B., died in  
Waltham in 1895 or 1896.
- †Yamamura, Kohachi, Yehimeken,  
Japan.

1894

S. F. HOWARD, *Secretary*.

- Alderman, Edwin H., C. S. C.,  
R. F. D., No. 2, Chester, Mass.,  
Farmer.
- Averell, Fred G., Q. T. V., 131  
State St., Boston, Mass., Clerk.
- Bacon, Linus H., Q. T. V.,  
36 Cherry St., Spencer, Mass.,  
with Phoenix Paper Box Com-  
pany.
- Bacon, Theodore S.,  $\Phi K \Phi$ ,  $\Phi \Sigma K$ ,  
69 Maple St., Springfield, Mass.,  
Physician and Surgeon. M. D.,  
Harvard, 1898.
- Barker, Louis M., C. S. C.,  
Hanson, Mass., Civil Engineer.
- Boardman, Edwin L., C. S. C.,  
Sheffield, Mass., Farmer.
- Brown, Charles L., C. S. C.,  
1364 Westfield St., West Spring-  
field, Mass. Business address,  
870 State St., Springfield, Mass.,  
Laundryman.

1894

- Curtis, Arthur C., C. S. C., Spring Valley, N. Y., Farmer.
- Cutter, Arthur H.,  $\Phi \Sigma K$ , 333 Broadway, Lawrence, Mass., Physician and Surgeon. M. D., Harvard, 1901.
- Davis, Perley E., Q. T. V., Granby, Mass., Farmer.
- †Dickinson, Eliot T., Q. T. V., 32 Maple St., Florence, Mass. Business address, 138 Main St., Northampton, Mass. Dentist.
- Fowler, Halley M., D. G. K., 52 Madison St., Somerville, Mass. Railway Postal Clerk.
- \*Fowler, Henry J., C. S. C., died February 2, 1911, at Hadley, Mass.
- Gifford, John E.,  $K \Sigma$ , Millbury, Mass., Farmer.
- †Greene, Frederick L., C. S. C., Modesto, Cal., Teacher. A. M., Columbia, 1899.
- Greene, Ira C., Q. T. V., 222 Pleasant St., Leominster, Mass., Ice and Coal Dealer.
- Higgins, Charles H., C. S. C., 196 Cartier St., Ottawa, Can., Pathologist to Department of Agriculture, Dominion of Canada. D. V. S., McGill University, 1896; Fellow of the Royal Microscopical Society of London, England, 1910.
- Howard, S. Francis,  $\Phi K \Phi$ ,  $\Phi \Sigma K$ , Amherst, Mass. M. Sc., Massachusetts Agricultural College, 1901; Ph. D., John Hopkins University, 1912. Teacher Chemistry, Amherst College.
- Keith, Thaddeus F., Q. T. V., 8 Wallace Ave., Fitchburg, Mass., Sign Manufacturer.
- Kirkland, Archie H.,  $\Phi \Sigma K$ , Huntington, Mass., Consulting Entomologist. M. Sc., Massachusetts Agricultural College, 1896.

1894

- Lounsbury, Charles P.,  $\Phi K \Phi$ ,  $\Phi \Sigma K$ , Chief of Division of Entomology, Department of Agriculture, Pretoria, South Africa.
- Manley, Lowell,  $K \Sigma$ , West Roxbury, Mass., Farm Superintendent.
- Merwin, George H., C. S. C., Southport, Conn., Farmer.
- Morse, Alvertus J., Q. T. V., 59 Main St., Northampton, Mass., Lawyer. L. L. B., Boston University, 1901.
- \*Pomeroy, Robert F., C. S. C., died 1909.
- Putnam, Joseph H.,  $K \Sigma$ , Litchfield, Conn., Farm Superintendent.
- †Sanderson, William E.,  $K \Sigma$ , address unknown.
- Smead, H. Preston,  $K \Sigma$ , Greenfield, Mass., Farmer.
- \*Smith, Geo. E., died Jan. 20, 1911.
- Smith, Ralph E.,  $\Phi K \Phi$ ,  $\Phi \Sigma K$ , Berkeley, Cal., Professor of Plant Pathology, University of California.
- Spaulding, Charles H.,  $\Phi \Sigma K$ , 223 Massachusetts Ave., Lexington, Mass., United States Inspector, Engineering Department.
- Walker, Claude F., C. S. C., 906 Summit Ave. Business address, 155 West 65th St., New York City, Teacher, High School of Commerce. Ph. D., Yale, 1897.
- White, Elias D.,  $\Phi \Sigma K$ , Athens, Ga., Postal Service.

## NON-GRADUATES

- Allen, Edward Welcome, Winchester, N. H.
- \*Austin, John, died in 1897.

1894

- Babbitt, Ellwood, c/o Department of State, Washington, D.C. Vice-Consul to Yokohama, Japan from the United States.
- Barton, Charles Henry, 456 Main St., Buffalo, N. Y. Shoe Specialist.
- Bentley, Irving W., Hartsville, Mass.
- Blanchard, Samuel P., Harvard, Mass.
- Cook, Jay Erastus, 84 Vesper St., Akron, O.
- †Drowne, George L., Providence.
- Duffield, William C., Quincy Point, Mass.
- Goessmann, Louis E., 220 Congress St., Boston, Mass. Salesman.
- Goodell, John Stanton, Hana, Maui, T. H., Farmer.
- Johnson, Charles F., Littleton, Mass., Chemist.
- †Jones, John Horace, Pelham, Mass.
- \*Learned, Henry Bond, died Jan. 3, 1891.
- Marvin, Samuel B., Richford, Vt.
- Morse, Elisha Wilson, Office of Experiment Station, U. S. Department of Agriculture, Washington, D. C., Specialist in Animal Husbandry.
- Park, Fred Ware, Chelmsford, Mass., Artesian Wells.
- Parker, Frank Ingram, 1010 White Bldg., Buffalo, N. Y.
- Robbins, Dana Watkins, Walpole, Mass.
- Sanford, George Otis, U. S. Reclamation Service, Malta, Mont, Engineer.
- Starr, Erastus Jones, Spencer, Mass., Superintendent of Water Works.
- Stockwell, Harry G., Sutton, Mass.
- Streeter, Albert R., Maple Dell, Cummington, Mass.

1895

- Thompson, Edmund F., 12 William St., Worcester, Mass., Mechanician.
- Whitcomb, Arthur M., West Acton, Mass., Insurance.
- 1895**
- E. A. WHITE, Secretary
- Ballou, Henry A.,  $\Phi K \Phi$ , Q. T. V., Barbadoes, B. W. I., Entomologist, Imperial Department of Agriculture for the West Indies. M. Sc., Massachusetts Agricultural College, 1906.
- †Bemis, Waldo L., Q. T. V., Spencer, Mass., Manufacturer.
- Billings, George A., C. S. C., Silver Springs, Md. Business address, U. S. Department of Agriculture, Washington, D. C., Farm Management Investigations.
- Brown, William C., D. G. K., 2 Wildwood Terrace, Winchendon. Business address, 103 Newbury St., Boston, Mass., Interior Decorator.
- Burgess, Albert F.,  $\Phi \Sigma K$ , Melrose, Highlands, Mass., Entomologist in U. S. Bureau of Entomology. M. Sc., Massachusetts Agricultural College, 1897.
- Clark, Harry E.,  $\Phi \Sigma K$ , Middlebury, Conn., Farm Superintendent.
- Cooley, Robert A.,  $\Phi \Sigma K$ , Bozeman, Mont., Professor of Zoology and Entomology, Montana Agricultural College; State Entomologist.
- Crehore, Charles W.,  $\Phi \Sigma K$ , Chicopee, Mass., Farmer.
- Dickinson, Charles M., Q. T. V., Park Ridge, Ill. Business address, 131 North St., Chicago, Ill., Seedsman and Florist.

1895

- Fairbanks, Herbert S., K  $\Sigma$ , 321 West Hansbury St., Germantown, Pa. Business address, 232 Chestnut St., Philadelphia, Pa., Patent Attorney.
- Foley, Thomas P. C. S. C., 113 Nichols Ave., Brooklyn, N. Y., Draughtsman.
- Frost, Harold L.  $\Phi$  K  $\Phi$ ,  $\Phi$   $\Sigma$  K, Arlington, Mass., Landscape Forester and Entomologist; Trustee of Massachusetts Agricultural College.
- Hemenway, Herbert D., C. S. C., Northampton, Mass., General Secretary Home Culture Clubs.
- Jones, Robert S.,  $\Phi$   $\Sigma$  K, 1487 Belmont St. Business address, 501 Wyandotte Bldg., Columbus, Ohio, Contracting Engineer.
- †Kuroda, Shiro  $\Phi$   $\Sigma$  K, 127 Second St., Osaka, Japan.
- Lane, Clarence B., D. G. K., 1118 Jefferson St., Philadelphia, Pa., Dairyman.
- Lewis, Henry W., 230 West 22d St., New York City.
- Marsh, Jasper, K  $\Sigma$ , Danvers, Mass., Electric Lamp Manufacturer.
- Morse, Walter L., K  $\Sigma$ , Grand Central Station, New York City, Terminal Engineer.
- Potter, Daniel C., C. S. C., Fairhaven, Mass., Landscape and Sanitary Engineer.
- Read, Henry B.,  $\Phi$   $\Sigma$  K, Westford, Mass. Farmer.
- Root, Wright A.,  $\Phi$   $\Sigma$  K, Easthampton, Mass., Fruit Grower.
- †Smith, Arthur B., Q. T. V., 1434 Farragut Ave., Fort Wayne Ind., Bookkeeper.
- \*Stevens, Clarence L., died October 8, 1901, at Sheffield, Mass.
- Sullivan, Maurice J., Littleton, N. H., Farm Manager.

1895

- Tobey, Frederick C., C. S. C., West Stockbridge, Mass., Lime Manufacturer.
- †Toole, Stephen P., Amherst, Mass.
- †Warren, Franklin L., Q. T. V., address unknown.
- White, Edward A.,  $\Phi$  K  $\Phi$ , K  $\Sigma$ , Amherst, Mass., Professor of Floriculture, Massachusetts Agricultural College.

## NON-GRADUATES

- Bagg, Edward O., Q. T. V. 1067 Riverdale St., West Springfield, Mass., Farmer.
- Brown, Mendall H., Amherst, Mass.
- Davis, Alfred, West Roxbury, Mass.
- Drury, Ralph W., Athol, Mass. Soldier.
- Dwyer, Elmer F., 34 Maple St., Lynn, Mass. Manufacturer.
- Henderson, Edward H., Port Chester, N. Y.
- Hubbard, Guy A., Ashby, Mass.
- Mason, Amos Hall, Medfield, Mass., Artesian Wells.
- Parker, Jacob, 405 West 118th St., New York City, Teacher.
- Robinson, Frank D., Petersham, Mass.
- Taylor, Efford Earl, Vershire, Vt., Traveling Salesman.
- Volio, Enrique Tinoco, San Jose, Costa Rica.
- Weed, Percy L., 15 Craigie St., Cambridge, Mass., Student, Massachusetts College of Osteopathy.
- Wentzell, William B. Wentzell Ave., Beverly, Mass. Veterinarian.
- Williams, John Sherman, Middleboro, Mass.
- Woodbury, Roger A., Cheshire, Conn.

## 1896

- ASA S. KINNEY, *Secretary*.
- \*Burrington, Horace C.,  $\Phi \Sigma K$ , died November, 1907, at Greenwich, Conn.
- Clapp, Frank L.,  $\Phi K \Phi$ , C. S. C., Cornwall-on-Hudson, N. Y., Civil Engineer.
- Cook, Allen B., C. S. C., Farmington, Conn., Farm Manager.
- Edwards, Harry T., C. S. C., Bureau Agriculture, Manila, P. I.
- Fletcher, Stevenson W.,  $\Phi K \Phi$ , C. S. C., Blacksburg, Va., Director Virginia Agricultural Experiment Station. M. Sc., Cornell, 1898; Ph. D., Cornell, 1900.
- Hammar, James F., C. S. C., Nashua, N. H., Farmer and Market Gardener.
- †Harper, Walter B., Q. T. V., address unknown.
- \*Jones, Benjamin K., C. S. C., died August 21, 1903, at Springfield, Mass.
- Kinney, Asa S.,  $K \Sigma$ , Mount Holyoke College, South Hadley, Mass., Floriculturalist and Instructor in Botany. M. Sc., Massachusetts Agricultural College.
- Kramer, Albin M.,  $K \Sigma$ , 171 Boston Road. Business address, 191 Liberty St., Springfield, Mass., Civil Engineer.
- †Leamy, Patrick A., address unknown.
- de Luce, Edmond,  $\Phi \Sigma K$ , Oyster Bay, New York. Business address, 27 West 23d St., New York City, Manager with G. P. Putnam & Sons.
- Marshall, James L., C. S. C., 6 Barnard Road, Worcester, Mass., with Osgood Bradley Car Co.
- 1896
- Moore, Henry W.,  $K \Sigma$ , 28 Amherst St., Worcester, Mass., Farmer and Market Gardener.
- \*Nichols, Robert P., D. G. K., Deceased.
- Nutting, Charles A.,  $\Phi \Sigma K$ , West Berlin, Mass., Farmer.
- Pentecost, William L., D. G. K., Chapinville, Conn., Farm Superintendent.
- Poole, Erford W.,  $\Phi K \Phi$ ,  $K \Sigma$ , North Dartmouth, Mass. Business address, P. O. Box 129, New Bedford, Mass., Estimator and Draughtsman.
- Poole, I. Chester,  $\Phi K \Phi$ ,  $K \Sigma$ , 204 High St., Fall River, Mass., Osteopathic Physician. D. O., American School of Osteopathy, 1904.
- Read, Frederick H.,  $\Phi \Sigma K$ , Oaklawn, R. I., Teacher.
- Roper, Harry H., C. S. C., Ipswich, Mass., Farm Manager.
- Saito, Seijiro, C. S. C., 12 Aoyama, Takagicho, Tokio, Japan, Professor of English Language in Nautical College. B. L., Nilson Law School, Tokio, 1907; Master's Degree, 1908.
- Sastre, Salome, D. G. K., Cardenas, Tabasco, Mexico, Sugar Planter and Manufacturer.
- Sellew, Merle E.,  $\Phi \Sigma K$ , Wallingford, Conn., Teacher.
- Shaw, Frederick B., D. G. K., Amherst, Mass., Farmer.
- Shepard, Lucius J., C. S. C., West Sterling, Mass., Farmer.
- Shultis, Newton,  $K \Sigma$ , Winthrop St., Winchester, Mass. Business address, 601 Chamber of Commerce, Boston, Mass., Grain Dealer.
- †Tsuda, George,  $\Phi \Sigma K$ , 213 Honmura, Cho., Azabu, Tokio, Japan, Editor.

1897

## NON-GRADUATES

- Curley, Walter James, Framingham, Mass., Physician.
- Day, Gilbert, 405 Green St., Cambridge, Mass.
- Dodge, William Bradford, Jamaica Plain, Mass.
- Geary, Hiram C., Pelham, Mass.
- Green, Josiah Elton, Berkeley, Cal., Real Estate.
- Hayward, Ralph L., Uxbridge, Mass.
- Kinsman, Ernest E., Heath, Mass. Farmer.
- Morse, Sidney L., 1210 Oakley Place, St. Louis, Mo., Author and Publisher.
- Rawson, Herbert W., Arlington, Mass., Market Gardener.
- \*Scannell, Michael E. Deceased.
- Shurtleff, Walter D., Plymouth, Mass., Physician.
- Stoddard, Samuel H., Rockland, Mass.
- Vallentine, Florence M., Florence, Mass.
- †Vaughan, Robert H., Worcester.
- Walsh, Thomas F., with Filene & Co., Boston.
- Washburn, Frank P., North Perry, Maine.

1897

C. A. PETERS, *Secretary*.

- Allen, Harry F., C. S. C., Winchester, Mass., Farmer.
- Allen, John W., C. S. C., Northboro, Mass., Market Gardener.
- Armstrong, Herbert J.,  $\Phi \Sigma K$ , 11337 Crescent Ave., Morgan Park, Ill., Assistant Professor of Civil Engineering, Armour Institute of Technology, Chicago.

1897

- Barry, John M.,  $\Phi \Sigma K$ , 104 Waltham St. Business address, 509 Tremont St., Boston, Mass., Automobile Dealer.
- †Bartlett, James L.,  $\Phi K \Phi$ , Q. T. V., Salisbury, Mass., Farmer.
- Cheney, Liberty L., Q. T. V., 322 Ellis St., Augusta, Ga., Veterinarian. M. D. V., University of Pennsylvania, 1899.
- Clark, Lafayette F., C. S. C., 312 North G. St., Oskaloosa, Iowa. Creamery Work.
- Drew, George A.,  $\Phi \Sigma K$ , Greenwich, Conn., Farm Manager.
- †Emrich, John A., Q. T. V., address unknown.
- Goessmann, Charles I., D. G. K., 1015 Diamond St., Philadelphia, Pa., Chemist.
- Leavens, George D.,  $\Phi K \Phi$ ,  $\Phi \Sigma K$ , 527 Second St., Brooklyn, N. Y. Business address, 651 Chambers St., New York City, President Coe-Mortimer Co.
- Norton, Charles A.,  $\Phi \Sigma K$ , 30 Grove St., West Lynn, Mass., Pianos and Piano Tuner.
- Palmer, Clayton F., C. S. C., 1622 Bushnell Ave., South Pasadena, Cal., Supervisor of Agriculture, Los Angeles City Schools. M. A., Leland Stanford University.
- Peters, Charles A.,  $\Phi K \Phi$ , C. S. C., Sunset Ave., Amherst, Mass., Associate Professor of Chemistry, Massachusetts Agricultural College. Ph. D., Yale, 1901.
- Smith, Philip H.,  $\Phi \Sigma K$ , Amherst, Mass., Assistant Chemist, Massachusetts Agricultural Experiment Station. M. Sc., Massachusetts Agricultural College. 1911.

1897

## NON-GRADUATES

- Allen, Edward B., Mt. Lebanon, N. Y., Farm Superintendent.
- †Barclay, Frederick W., address unknown.
- Birnie, Alexander C., Ludlow, Mass.
- Charmbury, Thomas H., Hanover, Pa., Dentist.
- Colby, Frederick William, Roxbury, Mass.
- Coleman, Robert P., Richmond, Mass., Farmer.
- Cook, Maurice E., Shrewsbury, Mass., Florist and Market Gardener.
- Eddy, John Richmond, Lame-deer, Mont., Superintendent Indian Reservation.
- Falby, Francis R., Northboro, Mass.
- Farnsworth, Robert L., Turners Falls, Mass., Mill Superintendent.
- Fitz, Austin H., Norwood, Mass., School Superintendent.
- Howe, Herbert F., North Cambridge, Mass.
- Hunter, Herbert C., South Natick, Mass.
- \*King, Charles A. died April, 1896, at college.
- Mansfield, George R., 2242 Ridge Ave., Evanston, Ill., Assistant Professor of Geology, Northwestern University.
- \*Millard, Frank C., died July 11, 1911.
- Nowell, Allen M., Honolulu, T.H., Manager Sugar Factory.
- Palmer, Edward D., Upland, Cal., Fruit Grower.
- Ranlett, Charles A., Billerica, Mass., Military Instructor in Boston High School.
- †Roberts, Percy C.

1898

- Sherman, Carleton F., Jamaica Plain, Mass.
- Sherman, Harry C. Dartmouth, Mass.
- Stearns, Harold E., 496 Chestnut St., Arlington, N. J., Veterinary Surgeon.
- West, Harold L., Pullman, Wash.

## 1898

- Adjemain, Aredis G., D. G. K., Adana, Eastern Turkey, care Rev. H. N. Barnum.
- Baxter, Charles N., C. S. C., Branford, Conn., Librarian Blackstone Memorial Library.
- Clark, Clifford G., D. G. K., Sunderland, Mass., Farmer.
- Eaton, Julian S., D. G. K., Nyack, N. Y. Business address 141 Broadway, New York City, Chief Attorney Traveler's Insurance Co. LL. B., University of Minnesota, 1904.
- Fisher, Willis S.,  $\Phi \Sigma K$ , 24 Vine St., Melrose, Mass., Principal Lincoln Grammar School.
- Montgomery, Alexander W., C. S. C., Hadley, Mass., Florist.
- Nickerson, John P., Q. T. V., West Harwich, Mass., Physician. M. D., Tufts Medical School, 1901.
- Warden, Randall D.,  $\Phi \Sigma K$ , 67 Treacy St. Business address, City Hall, Newark, N. J., Director Physical Training, Public Schools.
- Wiley, Samuel W.,  $K \Sigma$ , Ruxton, Md. Business address, 15 South Gay St., Baltimore, Md., Wiley & Co., Analytical and Consulting Chemists.
- Wright, George H.,  $\Phi \Sigma K$ , 282 McDonough St., Brooklyn, N. Y. Business address, care of Hornblower & Weeks, 42 Broadway, Bookkeeper.

1899

## NON-GRADUATES

- \*Holt, Henry D. Died Aug. 5, 1896.  
Kinsman, Willard Quincy, Ipswich, Mass., Farmer.  
Thompson, Harris A., 3 Courtland St., Worcester, Mass. Foreman.  
Wolcott, Herbert R., 147 Euclid Ave., Springfield, Mass. Business.

1899

DAN A. BEAMAN, Secretary.

- Armstrong, William H.,  $\Phi\Sigma K$ , San Juan, Porto Rico, Captain in U. S. army.  
†Beaman, Dan A., Q. T. V., Rio Piedras, Porto Rico, Farm Superintendent.  
Chapin, William E.,  $\Phi\Sigma K$ , Portland High School, Portland, Me. Teacher.  
Dana, Herbert W., C. S. C., 9 Oliver St., Salem, Mass. Advertising Manager.  
Hinds, Warren E.,  $\Phi K\Phi$ , C. S. C., Auburn, Ala., Professor of Entomology and Entomologist, Alabama Agricultural Experiment Station; Ph.D. Massachusetts Agricultural College, 1902.  
Hooker, William A.,  $\Phi\Sigma K$ , 1829 G St. Business address, Office of Experiment Stations, U. S. Dept. of Agriculture, Washington, D. C. Assistant Editor Experiment Station Record.  
Hubbard, George C.,  $\Phi\Sigma K$ , Sunderland, Mass. Farmer.  
†Maynard, Howard E., C. S. C. Address unknown.  
†Merrill, Frederick A., Mount Vernon, Ga.

1899

- Pingree, Melvin H., C. S. C., Ruxton, Md. Business address 2343 S. Clinton St., Baltimore, Md. Chemist with American Agricultural Chemical Co.  
Smith, Bernard H.,  $\Phi K\Phi$ , C.S.C., 17 Beaumont St., Springfield, Mass. M. S., George Washington Univ., 1903. L. L. B., National University, 1905. Chemist and Supt., Baker Extract Co.  
Smith, Samuel C., C. S. C., Holliston, Mass. Farmer.  
Turner, Frederick H.,  $\Phi K\Phi$ , C.S.C., Great Barrington, Mass. Merchant.  
Walker, Charles M., C. S. C., 100 West 90th St. Business address, 110 East 23rd St., New York City. Manager Lantern Slide Dept., Charles Beseler Co.

## NON-GRADUATES

- Boutelle, Albert A., Wellesley Farms, Mass. Farm Manager.  
Chapman, John C., Stoughton, Mass.  
Courtney, Howard S., Greenport, Long Island, N. Y. Florist.  
Davis, John Alden, 36 Groveland St., Springfield, Mass. City Forester.  
Dickinson, Carl C., 204 Cottage Grove Ave., Santa Barbara, Cal.  
Dutcher, John R., Nyack, N. Y.  
†Gile, Alfred D., Worcester.  
†Keenan, George F., Boston.  
Smith, Carl William, Melrose, Mass.  
Stacy, Clifford E., Claud, N. Mex.  
Wright, Edwin M., Manteno, Ill.



## 1900

- E. K. ATKINS, Secretary  
Atkins, Edwin K., K  $\Sigma$ , 15 Hubbard Ave., Northampton, Mass. Civil Engineer.
- Baker, Howard, C. S. C., 6 Edgewood St., Woodsdale, Wheeling, W. Va. Veterinarian. Inspector U. S. Bureau of Animal Industry. M. D. V., Univ. of Pennsylvania, 1902.
- Brown, F. Howard, K  $\Sigma$ , Hosmer St., Marlboro, Mass. Farmer.
- †Campbell, Martin A., C. S. C. Address unknown.
- †Canto, Ysidro, D. G. K. Address unknown.
- Crane, Henry L.,  $\Phi$   $\Sigma$  K, Westwood, Mass. Fruit Grower.
- \*Felch, Percy F., C. S. C., died in North Hadley July 8, 1900.
- Frost, Arthur F., C.S.C., 23 Flatbush Ave. Business address, 1364 East 17th St., Brooklyn, N. Y. Civil Engineer.
- Gilbert, Ralph D., C. S. C., Milburne Road, Belmont, Mass. Business address, 43 Chatham St., Boston, Mass. Chemist and vice-president Bowker Insecticide Co. Ph.D. Yale, 1904.
- Halligan, James E., K  $\Sigma$ , Box 246, Baton Rouge, La. Chemist State Experiment Station.
- \*Harmon, Arthur A.,  $\Phi$ K $\Phi$ , C.S.C., died November, 1910.
- Hull, Edward T.,  $\Phi$  K  $\Phi$ , C. S. C., 2420 Seventh Ave., New York City. M. D., Columbia Univ., 1904. Physician.
- Kellogg, James W.,  $\Phi$   $\Sigma$  K, 133 Walnut St., Harrisburg, Pa. Chief Chemist Pennsylvania Dept. of Agriculture.
- Landers, Morris B., D. G. K., 599 Seventh St. Business address, 79 Washington Boulevard, Detroit, Mich. M. D., Detroit Medical College. Physician and Surgeon.

## 1900

- †Lewis, James F.,  $\Phi$   $\Sigma$  K. Address unknown.
- Monahan, Arthur C.,  $\Phi$ K $\Phi$ , C.S.C., 132 Bryant St. Business address, Bureau of Education, Washington, D. C. Specialist in Agricultural Education.
- Morrill, Austin W.,  $\Phi$  $\Sigma$ K, Phoenix, Ariz. Entomologist Arizona Horticultural Commission and Agricultural Experiment Station. Ph.D., Massachusetts Agricultural College, 1903.
- Munson, Mark H., C. S. C., Huntington, Mass. Farmer.
- Parmenter, George F.,  $\Phi$   $\Sigma$  K, Waterville, Me. Professor of Chemistry Colby College. Ph.D., Brown Univ.
- Stanley, Francis G., Q. T. V., 144 Cabot St., Beverly, Mass. M.D. Harvard University. Physician.
- †West, Albert M.,  $\Phi$   $\Sigma$  K, Washington, D. C., U. S. Department of Agriculture, Bureau of Animal Industry.

## NON-GRADUATES

- Crowell, Charles A., Jr., Vineyard Haven, Mass. School Superintendent.
- Crowell, Warner R., 26 Summer St., Everett, Mass. Real Estate.
- March, Allen L., Ashfield, Mass.
- Otis, Wilbur C., Beachmont, Mass.
- Risley, Clayton E., Plainfield, N.J.
- Rogers, William B., Cambridge, Mass.
- Sharpe, Edward H., 811 North Market St., Frederick, Md. Salesman.
- Walker, Henry E., Vineyard Haven, Mass.

## 1901

- J. H. CHICKERING, Secretary.
- Barry, John C., K  $\Sigma$ , 1195 Eastern Ave., Schenectady, N. Y. Electrical Engineer.
- Bridgeforth, George R., Tuskegee Institute, Tuskegee, Alabama. Teacher.
- Brooks, Percival C.,  $\Phi \Sigma K$ , 1828 Euclid Ave., Chicago Heights. Business address, 151 Twenty-second St., Chicago Heights, Ill. Assistant Superintendent General Chemical Co.
- Casey, Thomas, Q. T. V., 20 Clafin St., N. Leominster, Mass. Business address, 145 Main St. Lawyer.
- Chickering, James H.,  $\Phi \Sigma K$ , Dover, Mass. Vice-president E. F. Hodgson Co.
- Cooke, Theodore F., C. S. C., 183 Elm St., Pittsfield, Mass. Teacher of Mathematics, Pittsfield High School.
- Dawson, William A., C. S. C., Willimantic, Conn. Florist.
- †Dickerman, William C.,  $\Phi \Sigma K$ , Address unknown.
- †Gamwell, Edward S., C. S. C. Address unknown.
- Gordon, Clarence E.  $\Phi K \Phi$ , C. S. C., Amherst, Mass. Associate Professor of Zoology and Geology, Massachusetts Agricultural College. A. M., Columbia Univ., 1905. Ph.D., Columbia Univ., 1911.
- Graves, Thaddeus, Jr.,  $\Phi \Sigma K$ , Hatfield, Mass. Farmer.
- Henry, James B., D. G. K., 288 Sergeant St. Business address, 50 State St., Hartford, Conn. L. L. B., Univ. of Michigan, 1904. Lawyer.
- Hunting, Nathan J., C. S. C., Shutesbury, Mass. Farmer.
- Leslie, Charles T., C. S. C., 86 North St., Pittsfield, Mass.

## 1901

- M. D., Columbia Univ., 1905. Physician.
- Macomber, Ernest L.,  $\Phi \Sigma K$ , West Barnstable, Mass. Station Agent.
- †Ovalle, Julio, D. G. K. Address unknown.
- Pierson, Wallace R.,  $\Phi K \Phi$ , K  $\Sigma$ , Cromwell, Conn. Secretary and Assistant Treasurer of A. N. Pierson, Inc. Wholesale Florists.
- Rice, Charles L., C. S. C., 9 Cambridge Road, Lee, South East London, England. Works Manager Western Electric Co., N. Woolwich, Eng.
- Root, Luther A.,  $\Phi \Sigma K$ , Amherst, Mass. Farmer.
- Schraffrath, Max, Colinga, Cal. Superintendent Standard Oil Company.
- Smith, Ralph I., Q. T. V., Mayaguez, P. R. Professor Zoology and Entomology, College of Agriculture and Mechanic Arts.
- Tashjian, Dickran B., Q. T. V., Turner Hill, Ipswich, Mass. Landscape Gardener.
- †Todd, John H., Q. T. V., Rowley, Mass.
- Whitman, Nelson D.,  $\Phi \Sigma K$ , 1938 Cordova St. Business address, 525 Central Building, Los Angeles, Cal. Chief Engineer Reinforced Concrete Pipe Co.
- Wilson, A. C., Phi Kappa Phi,  $\Phi \Sigma K$ , First Nat. Bank Bldg, San Francisco, Cal. Civil Engineer.

## NON-GRADUATES

- Baker, John Brown, Humboldt St., Union Hill, N. J. Teacher.
- Boutelle, Clarence A., Montgomery, Ala.
- Clarke, George Crowell, Malden, Mass.
- Curtis, Ernest W., Canton, Mass.
- Dana, George Henry, Amherst, Mass. Farmer.

1902

- Dorman, Allison R., 114 Mill St., New Bedford, Mass. Teacher.
- Greeley, Dana S. B., East Foxboro, Mass.
- †Gurney, Victor H. Address unknown.
- Hemenway, Francis E., Williams-ville, Mass.
- Howard, John H., Westford, Mass. Farmer.
- Jones, Clark Winthrop, Huntington, Mass.
- Jones, Cyrus W., 151 Lexington Ave., Waverley, Mass. Student Harvard University.
- Judd, Warren H., South Hadley, Mass. Farmer.
- Moulton, Harry J., South California Edison Co., Los Angeles, Cal. Salesman.

1902

H. L. KNIGHT, Secretary.

- Belden, Joshua H., Φ Σ K, 1 Houston-Fergus Court, Columbus, Ohio. Special Agent for Fidelity and Casualty Co., in charge of Southeastern Ohio.
- †Bodfish, Henry L., D. G. K., 56 Oliver St., Derby, Conn. Civil Engineer.
- Carpenter, Thorne M., Φ K Φ, C. S. C., 103 Francis St., Roxbury, Mass. Business address, Nutrition Laboratory, Fenway, Boston, Mass. Chemist for Carnegie Institute.
- \*Church, Frederick R., C. S. C., died at Queens, Long Island, N. Y., March 17, 1910.
- Claffin, Leander C., Φ Σ K, 3202 Arch St., Philadelphia, Pa. Merchant. Business address, 1107 Chestnut St.
- Cook, Lyman A., Q. T. V., Millis, Mass. Farmer.

1902

- Cooley, Orrin F., 867 S. Clarkson St., Denver, Colo. Civil Engineer.
- Dacy, Arthur L., Φ K Φ, C. S. C., 28 Buchanan Ave., Morgantown, W. Va. Assistant Horticulturist, West Virginia Agricultural Experiment Station.
- Dellea, John M., C. S. C., Great Barrington, Mass. Farmer.
- Dwyer, Chester E., C. S. C., Nebraska City, Neb. Farm Mgr.
- Gates, Victor A., Φ Σ K, Lonoke, Ark. With Gates Mercantile Co.
- Hall, John C., Φ Σ K, South Sudbury, Mass. Teacher.
- Hodgkiss, Harold E., C. S. C., 90 Lyceum St., Geneva, N. Y. Assistant Entomologist, N. Y. Agric. Experiment Station.
- †Kinney, Charles M., Φ Σ K, 450 Roslyn Place; business address, Francis Parker School, 330 Webster Ave., Chicago, Ill. Teacher of Music.
- Knight, Howard L., Φ K Φ, C. S. C., 1420 Buchanan St.: business Office of Experiment Stations, U. S. Dept. of Agriculture, Washington, D. C. Assistant Editor, Experiment Station Record.
- Lewis, Claude I., C. S. C., Corvallis, Ore., State Horticulturist and Professor of Horticulture, Oregon State University and Agricultural Experiment Station. M. Sc. Agr., Cornell University, 1906.
- Morse, Ransom W., Q. T. V., 9 June St.: business address, Worcester Telegram, Worcester, Mass. M. Sc., Dartmouth, 1907. Journalist.
- †Paul, Herbert A., C. S. C., Tie Plant, Ark., Civil Engineer Rock Island Railroad.

1903

- †Plumb, Frederic H., D. G. K., 7 Elm Grove St., South Norwalk, Conn. Salesman.
- Saunders, Edward B., D. G. K., Nashua, N. H. Manager for Swift & Co.
- Smith, S. LeRoy, C. S. C., 73 Parkhurst St., business address 107 Halsey St., Newark, N. J. Y. M. C. A. Secretary.
- †West, D. Nelson, Q. T. V., Roslyn, Long Island, N. Y. Civil Engineer.

**NON-GRADUATES**

- Adams, Edward E., Millis, Mass.
- \*Ball, George Treadwell, died Mar. 15, 1910.
- Chapin, Warren L., Amherst, Mass.
- Chase, William J., Lynn, Mass.
- Cole, William R., Deerfield, Mass. Teacher.
- Greenman, Fred H., Haverhill, Mass.
- Hanlon, Harold C., N. Easton, Mass.
- Holder, Walter S., Chelmsford, Mass. Farmer.
- †James, Harold F., Boston.
- †James, Hubert C., Boston.
- McCobb, Edmond F., Milford, Mass.
- Peabody, Harry E., 807 Warren Ave., Brockton, Mass. Postal Clerk.
- Walker, Alpheus H., Millbrook, Mass. Farmer.
- Warden, James K., 522 W. 36th St., New York City. Contractor.

1903

GERALD D. JONES, Secretary.

- †Allen, William E.,  $\Phi \Sigma K$ , Address unknown.

1903

- Bacon, Stephen C.,  $K \Sigma$ , 64 Rutgers Ave., Jersey City, N. J., Civil Engineer.
- Barrus, George L.,  $K \Sigma$ , Lithia, Mass., Farmer.
- †Bowen, Howard C., Q. T. V., Address unknown.
- †Brooks, Philip W., Q. T. V., Imperial, Cal., Farmer.
- Cook, Joseph G.,  $\Phi K \Phi$ , C. S. C., Hadley, Mass., (Amherst R. F. D.) Farmer.
- Franklin, Henry J.,  $\Phi K \Phi$ , Q. T. V., Amherst, Mass., in charge of Cranberry Investigation, Massachusetts Agricultural Experiment Station; Ph. D., Massachusetts Agricultural College, 1908.
- Halligan, Charles P.,  $K \Sigma$ , East Lansing, Mich., Assistant Professor of Horticulture, Michigan Agricultural College.
- Harvey, Lester F., C. S. C., Romford, Conn., Farmer.
- Hood, William L., Boley, Okla., Principal Buckeye School.
- Jones, Gerald D., Q. T. V., North Amherst, Mass., Farm Superintendent.
- Lamson, George H., Jr., C. S. C., Storrs, Conn., Professor of Zoology, Connecticut Agricultural College; M. Sc., Yale 1905.
- †Monahan, Neil F., C. S. C., South Framingham, Mass.
- †Nersessian, Paul N., Marash, Turkey.
- Osmun, A. Vincent,  $\Phi K \Phi$ , Q. T. V., Amherst, Mass., Assistant Professor of Botany, Massachusetts Agricultural College; M. Sc., Massachusetts Agricultural College, 1905.
- Parsons, Albert, Q. T. V., Dover, Mass., Farm Supt.
- †Peebles, W. W., Address unknown.

## 1903

- Poole, Elmer M.,  $\kappa \Sigma$ , North Dartmouth, Mass., Farmer.
- †Proulx, Edward G.,  $\Phi \Sigma \kappa$ , Lafayette, Ind., Chemist, Indiana Agricultural Experiment Station; M. Sc. Agr., Purdue University, 1909.
- \*Robertson, R. H.,  $\kappa \Sigma$ , died Sept. 10, 1904, at Amherst, Mass.
- Snell, Edward B., Q. T. V., 24 High St., Business address, 42 Church St., New Haven, Conn., Civil Engineer.
- Tinkham, Charles S., D. G. K., 126 Thornton Street, Roxbury, Mass., Civil Engineer for Massachusetts Highway Commission.
- Tottingham, William E.,  $\Phi \kappa \Phi$ , Q. T. V., Madison, Wis., Professor and Research Assistant in Agricultural Chemistry, College of Agriculture, University of Wisconsin; M. Sc., University of Wisconsin, 1908.
- †Tower, Winthrop V.,  $\Phi \Sigma \kappa$ , San Juan, Porto Rico, Entomologist Porto Rico Agricultural Experiment Station.
- West, Myron H., Q. T. V. 27 Linden Court, Business address 140 South Dearborn St., Chicago, Ill., President American Park Builders, Inc.

## NON-GRADUATES

- †Allen, Lilly Bertha. Address unknown.
- Blake, Ernest E.,  $\Gamma \Pi$ , Mass.
- †Bowler, Patrick H. Address unknown.
- Carmody, John F., Bondsville, Mass.
- Cheever, Herbert M., West Boylston, Mass.
- Dillon, James H., Belchertown, Mass.

## 1904

- Harris, Frederick A., R. F. D., Amherst, Mass.
- Higgins, Willis E., Winchester, Mass.
- Kelly, Herbert T., Bellows Falls, Vt., Secretary Robertson Paper Company.
- Martin, Henry T., Fearing St., Amherst, Mass., Express Clerk.
- Parsons, Josiah W., 128 Bridge St., Northampton, Mass.
- Perkins, Edward L., 34 Eaton St., Winchester, Mass., Salesman.
- Phelps, Arthur A., Southboro, Mass.
- Phillips, Lee, Terrace Ave., Carnegie, Pa., Salesman.
- Potter, Roland D., Rutland, Mass.
- Richardson, Harlan L., 58 Main St., Winter Hill, Mass., Bacteriologist and Chemist.
- Thompson, Leslie I., Allenton, R. I., Fruit Grower.
- Tinker, Clifford A., 43 Main St., Westfield, Mass., Architect and Engineer.
- Vance, Phillip G., 22 Allen St., Bradford, Mass., Pattern Maker.
- Webster, Frank W., 180 Union St., Springfield, Mass.
- Wollheim, Ernest, Jersey City, N. J.

## 1904

- P. F. STAPLES, Secretary.
- Ahearn, Michael F., C. S. C., 507 Laramie St., Manhattan, Kan., Ass't Professor of Horticulture, Kansas Agricultural College.
- Back, Ernest A.,  $\Phi \kappa \Phi$ , C. S. C., Honolulu, T. H., Entomologist, U. S. Department of Agriculture, Ph., D., Massachusetts Agricultural College, 1907.

1904

- Blake, Morris A., Q. T. V., 124 Hamilton St., New Brunswick, N. J., Horticulturist, New Jersey Agricultural Experiment Station.
- Couden, Fayette D.,  $\Phi K \Phi$ ,  $\Phi \Sigma K$ , 424 First St., South Bend, Washington, Lawyer.
- Elwood, Clifford F., K.  $\Sigma$ ., 2009 Vallejo St., San Francisco, Cal., Contractor.
- Fulton, Erwin S., C. S. C., North Amherst, Mass., Farmer.
- Gilbert, Arthur W.,  $\Phi K \Phi$ , C.S.C., Ithaca, N. Y., Professor of Plant Breeding, Cornell University; M. Sc. Agr., Cornell University, 1905; Ph. D., Cornell University, 1909.
- Gregg, John W., C. S. C., Univ. California, Berkeley, California, Prof. of Landscape Gardening.
- Griffin, Clarence H.,  $\Phi \Sigma K$ , 1864 Park Road, Washington, D. C., Bacteriologist, Chapin - Sachs Manufacturing Company; M. D., George Washington University, 1909.
- Haskell, Sidney B.,  $\Phi K \Phi$ , C.S.C., 5 Fearing St., Amherst, Mass., Associate Professor of Agronomy, Massachusetts Agricultural College.
- Henshaw, Fred F.,  $\Phi K \Phi$ , C.S.C., 801 Kelley St., Business address 208 Telford Building, Portland, Oregon, District Engineer U. S. Geological Survey.
- Hubert, Zachary T., President Jackson College, Jackson, Miss.
- Newton, Howard D., C. S. C., Head of Department of Chemistry, Connecticut Agricultural College, Storrs, Conn.
- †O'Hearn, George E., C. S. C., Pittsfield, Mass.
- Parker, Sumner R., C. S. C., Hardwick, Mass., Farmer.

1904

- Peck, Arthur L.,  $\Phi K \Phi$ , C. S. C., College Crest, Corvallis, Oregon, Teacher Landscape Gardening and Floriculture, Oregon State College.
- Quigley, Raymond A., C. S. C., 3006 Rockefeller Ave, Business address 406 Commerce Building, Everett, Washington, M. D., Harvard Medical School, Physician.
- †Raymouth, R. Raymond, K  $\Sigma$ , Tacoma, Wash.
- Staples, Parkman F., C. S. C., North Grafton, Mass., Farmer.
- White, Howard M.,  $\Phi K \Phi$ ,  $\Phi \Sigma K$ , Hilton, N. Y., Farmer.

## NON-GRADUATES

- Baker, Perez R., 24 Gray St., Amherst, Mass., Farmer.
- Collins, Joseph D., Northampton, Mass.
- Copeland, William Wallace, Townsend, Mass.
- Cummings, John F., Brockton, Mass.
- Ellsworth, Frank L., 356 Dwight St., Holyoke, Mass.
- \*Esip, Edward Thomas, Deceased.
- Fahey, John J., 16 Myrtle St., Pittsfield, Mass., Postal Clerk.
- Graves, George A., Northampton, Mass.
- Haffenreffer, Adolf F., 866 Davol St., Fall River, Mass., Brewer.
- Handy, Robert S., Cataumet, Mass., Farmer.
- Hill, Louis W. B., Greenfield Hill, Conn.
- Kelleher, Justin, Brockton, Mass.
- Kirby, Daniel Webster, Thompson, Conn.
- Paul, Augustus Russell, Belvidere, N. J., Fruit Grower.

## 1905

- Pease, James Arthur, R. F. D. 9, Fairfield, Conn. Real Estate.
- Pierce, Hervey C., Millbury, Mass., Merchant.
- Richardson, Charles H., Boxboro, Mass.
- Ryan, Arthur, North Hadley, Mass.
- Sawin, Ralph Dana, Pembroke, Mass.
- Smith, Walter Abbe, Springfield.
- Thompson, Clarence L., South Natick, Mass.
- Witherell, George A., Warwick, Mass.
- Witt, Henry H., Federal St., Belchertown, Mass.

## 1905

A. D. TAYLOR, Secretary.

- Adams, Richard L.,  $\Phi K \Phi$ , Messina Hotel, Bakersfield, California, Business address, Buttonwillow, California, Ranch Manager.
- Allen, G. Howard,  $\Phi \Sigma K$ , Highland, Santa Bernardino Co., California, General Fruit Growing.
- Barnes, Hugh L., C. S. C., Interlaken, Stockbridge, Mass., Farmer.
- Bartlett, Frank A.,  $\Phi \Sigma K$ , Hope St., Glenbrook, Conn., Business address, 262 Atlantic St., Stamford, Conn., President and Treasurer Frost and Bartlett Co.
- Crosby, Harvey, D., Q. T. V., Princeton, Mass., Farm Supt.
- Cushman, Miss Esther C.,  $\Phi K \Phi$ , 21 Brown St., Providence, R. I., Assistant at Ammary Brown Memorial.
- Gardner, John J., C. S. C., Univ. Illinois, Urbana, Ill., Instructor in Horticulture and Graduate Student.

## 1905

- Gay, Ralph P.,  $\Phi \Sigma K$ , 316 West Front St., Plainfield, N. J., Forester.
- Hatch, Walter B., C. S. C., Warren, R. I., Business address, Nayatt Point, R. I., Supt., R. I. Country Club.
- Holcomb, C. Sheldon,  $K \Sigma$ , 153 Hemenway St., Boston, Mass., Teacher of Voice and Public Speaking.
- Hunt, Thomas F., C. S. C., Berkeley, Cal., Assistant Plant Pathologist, University of California.
- †Ingham, Norman D., C. S. C., Santa Monica, Cal., Silviculturalist.
- Kelton, J. Richard,  $K \Sigma$ , 34 Pearl Street, Amsterdam, N. Y., Teacher Amsterdam High School.
- †Ladd, Edward T.,  $K \Sigma$ , 609 Falls Road Terraces, Roland Park, Md., Chemist, Baugh Chemical Company; M. Sc., Massachusetts Agricultural College, 1907.
- †Lewis, Clarence W., Q. T. V., 28 Albine Street, Melrose Highlands, Mass.
- Lyman, John F.,  $\Phi K \Phi$ ,  $K \Sigma$ , 1345 Highland Street, Columbus, Ohio, Associate Professor of Agricultural Chemistry, Ohio State University; Ph. D., Yale University, 1909.
- Munson, Willard A.,  $\Phi K \Phi$ ,  $\Phi \Sigma K$ , Littleton, Mass., Fruit Grower.
- Newhall, Edwin W., Jr., D. G. K., 260 California Street, San Francisco, Cal., Farmer.
- Patch, G. Willard,  $\Phi K \Phi$ ,  $\Phi \Sigma K$ , Rangeley Road, Arlington, Mass., Purchasing Agent for Brown Durrell Co., Boston.
- Sanborn, Monica L., (Mrs. William O. Taft),  $\Phi K \Phi$ , R. F. D., No. 4, Northfield, Vt.

1905

- Sears, William M.,  $\Phi \Sigma K$ , Elm St., Glenbrook, Conn., Business address, 262 Atlantic St., Stamford, Conn., Sales Manager Frost & Bartlett Co.
- Swain, Allen N.,  $\Phi \Sigma K$ , 15 Merlin St., Dorchester, Mass., Business address, Tremont Building, Boston, Mass., Horticulturalist.
- Taylor, Albert D.,  $\Phi K \Phi$ , C. S. C., 1101 Tremont Building, Boston, Mass., Superintendent for Warren H. Manning, Landscape Architect: M. Sc., Agr., Cornell University.
- Tompson, Harold F.,  $\Phi K \Phi$ ,  $K \Sigma$ , R. F. D. No. 4, Attleboro, Mass., Market Gardener.
- Tupper, Bertram,  $\Phi K \Phi$ ,  $K \Sigma$ , Venice, Cal., Dairying.
- Walker, Lewell S.,  $A \Sigma \Phi$ , 19 Phillips St., Amherst, Mass., Assistant Chemist, Massachusetts Agricultural Experiment Station.
- Whitaker, Chester L.,  $\Phi \Sigma K$ , 46 Second Ave., Pelham, N. Y., President Munson Whitaker Company, 4th Ave. Bldg., New York, Commercial and Landscape Foresters.
- \*Williams, Percy F.,  $K \Sigma$ , died December 4, 1912, at Auburn, Ala.
- Willis, Grenville N.,  $\Phi K \Phi$ ,  $\Phi \Sigma K$ , 82 Bromfield Road, West Somerville, Mass. Business address, 15 Ashburton Place, Boston, Mass., Civil Engineer for Massachusetts Highway Commission.
- Yeaw, Frederick L.,  $\Phi \Sigma K$ , Roswell, New Mexico, Manager Oasis Ranch.

#### NON-GRADUATES

- Belden, William Lucius, Brockton, Mass.
- Brett, Clarence E., Kingston, R. I.

1905

- Brigham, Fred W., Ashburnham, Mass.
- Bruce, Ernest C., School St., Somerville, Mass.
- Carter, Chester M., Barre, Mass., Florist.
- Goodenough, Herbert H., Saratoga Springs, N. Y.
- Graves, Edwin L., Hatfield, Mass.
- \*Hamblin, John H., died March 20, 1905.
- Huntington, Raymond E., Willow St., Wollaston, Mass., Advertising Manager.
- Knight, John H., Middletown, Mass.
- Ladd, Joseph, Jr., 33 Riverside St., Watertown, Mass.
- Lyman, Richard R., Montague, Mass., Farmer.
- Merrill, Charles E., Jr., 421 Essex St., Salem, Mass., with H. P. Hood & Sons.
- O'Neil, William J., 11 Grant St., Beverly, Mass., Pattern Maker.
- \*Peck, Louis E., died early in 1912.
- Porter, Charles A., 52 Hancock St., Boston, Mass.
- Ransehousen, Lyman A., 29 Sherman St., Springfield, Mass., Insurance.
- Rhodes, Elmer E., 36 Linden Ave., North Attleboro, Mass., Farmer.
- Richardson, Justus C., 701 Mammoth Road, Dracut, Mass., Market Gardener.
- Smith, Robert E., South Hadley Falls, Mass. Farmer.
- Sprague, Charles E., West Springfield, Mass.
- Straw, Harold D., Guilford, Me., Farmer.
- Sykes, Charles S., 30 Field St., West Springfield, Mass., Motorman.
- Tinkham, Henry B., Touisset, Mass., Market Gardener.



1906

- Walsh, Thomas F., Shirley St.,  
Ayer, Mass., Traveling Sales-  
man.  
Williams, Franklin K., Collins-  
ville, Conn.

1906

- RICHARD WELLINGTON, Secretary.  
Carey, Daniel H., Q. T. V.,  
Blythe, Riverside Co., Cal.,  
Nurseryman.  
Carpenter, Charles W.,  $\Phi$  K  $\Phi$ , K  $\Sigma$ ,  
Monson, Mass., Farmer.  
Craighead, William H., 10 South  
Court Ave., Harrisburg, Pa.,  
Editor.  
Filer, Harry B., 82 University  
Ave. Business address, 13 City  
Hall, Buffalo, N. Y., City  
Forester.  
French, Talbot G.,  $\Phi$  K  $\Phi$ ,  $\Phi$   $\Sigma$  K,  
102 East Franklin St. Business  
address, 1103 East Main St.,  
Richmond, Va., State Seed  
Expert.  
Gaskill, Edwin F., C. S. C.,  
Amherst, Mass., Assistant Agri-  
culturalist, Massachusetts Agri-  
cultural Experiment Station.  
Hall, Arthur W., Jr.,  $\Phi$   $\Sigma$  K,  
North Amherst, Mass., Lawyer.  
Hastings, Addison T., Jr., Q. T. V.,  
168 Grant Ave. Business ad-  
dress, City Hall, Jersey City,  
N. J., City Forester, Secretary  
of Shade Tree Commission.  
\*Hood, Clarence E., Q. T. V., died  
June 18, 1912, at Champaign,  
Ill.  
Kennedy, Frank H., C. S. C.,  
33 Goddard Road. Business  
address, City Hall, Brockton,  
Mass., Analyst for Brockton  
Sewage Commission.  
†Martin, J. Edward, C. S. C.,  
Leadville, Colo., U. S. Forest  
Service.

1906

- Moseley, Louis H., C. S. C.,  
Glastonbury, Conn., Farmer.  
Mudge, Everett P., K  $\Sigma$ , 69  
Cherry St., Swampscott, Mass.,  
Tree Warden.  
Peaks, Ralph W., Q. T. V., 7  
Walnut St., Newtonville, Mass.,  
Chemist with Cochran Chemical  
Co., Boston.  
Pray, F. Civile,  $\Phi$   $\Sigma$  K, Trinidad,  
Cuba. Summer address, Am-  
herst, Mass., Chemist and Sup-  
erintendent Trinidad Sugar  
Company.  
Rogers, Stanley S.,  $\Phi$  K  $\Phi$ , K  $\Sigma$ ,  
Whittier, Cal., Assistant Plant  
Pathologist University of Cali-  
fornia.  
Russell, Harry M.,  $\Phi$  K  $\Phi$ , C. S. C.,  
Bureau of Entomology, U. S.  
Department of Agriculture,  
Washington, D. C.  
Scott, Edwin H.,  $\Phi$  K  $\Phi$ , K  $\Sigma$ ,  
Millidgeville, Ga., Professor of  
Agriculture and Biology, Georgia  
Normal and Industrial College.  
Sleeper George W.,  $\Phi$  K  $\Phi$ , C. S. C.,  
Kendal Green, Mass., Farmer.  
Business address, 63 South St.,  
Boston, Mass., Leather Business.  
†Strain, Benjamin, Q. T. V.,  
Maybrook, N. Y., Assistant  
Civil Engineer, Central New  
England Railroad.  
Suhlke, Herman A., K  $\Sigma$ , 273  
Biddle Ave., Wyandotte, Mich.,  
with Pennsylvania Salt Manu-  
facturing Company.  
Taft, William O., C. S. C.,  
R. F. D. No. 4, Northfield, Vt.,  
Farmer.  
Tannatt, Willard C., Jr.,  $\Phi$  K  $\Phi$ ,  
C. S. C., Easthampton, Mass.,  
Town Engineer.  
Tirrell, Charles A., Q. T. V.,  
1481 Irving Park Boulevard,  
Chicago, Ill. Business address,  
815 Steinway Hall, Landscape  
Engineer.

1906

- Wellington, Richard,  $\Phi K \Phi$ , Q. T. V., Geneva, N. Y., Horticulturalist, New York Agricultural Experiment Station. M. Sc., Harvard, 1911.
- †Wholley, Francis D., Q. T. V., North Scituate, Mass.
- Wood, Alexander H. M.,  $K \Sigma$ , Eastondale, Mass., Farmer.

## NON-GRADUATES

- Abbott, Chester D., Andover Mass., Milk Dealer.
- Bacon, Roland A., 144 N. 18th St., Boston, Mass., Window Trimmer.
- Baird, Clarence H., Holyoke, Mass.
- Brydon, Robert P., Lake Forest, Ill., Gardener.
- Colton, William W., 30 Mountain Ave., Fitchburg, Mass., City Forester and Park Superintendent.
- Connely, Thomas H., 52 Snowhill St., Boston, Mass.
- Cowles, Edward R., Deerfield, Mass., Farmer.
- Farrar, Allen D., Box 45, Milford, Mass., General Secretary Y. M. C. A.
- Ferren, Frank A., Peabody, Mass.
- Foster, Samuel C., 100 Chestnut St., Boston, Mass.
- Goodale, Ray Coit, Suffield, Conn., Farmer.
- Hayward, Afton S., South Amherst, Mass.
- Hersen, Elbert W., Waukegan, Ill.
- Jones, Louis F., Somerville, Mass.
- \*Keith, Earl Wadsworth, died in July, 1906, at North Easton, Mass.
- Mahoney, Francis W., 21 Bailey St., Boston, Mass.

1907

- Markham, Joseph, Ayer, Mass.
- Morse, Stanley F., Northboro, Mass., Consulting Agriculturalist Expert and Farmer.
- Prenn, Joseph, Amherst, Mass.
- Racicot, Arthur A., Jr., Lieutenant U. S. N., U. S. N. D., Washington, D. C.
- Russell, Herbert O., North Hadley, Mass., Farmer.
- \*Shannon, Alonzo H., Deceased.
- Spurr, Fred Yerxa, Melrose Highlands, Mass.
- Stevens, Fred O., Nashua, N. H.
- Sullivan, Patrick F., Amherst, Mass.
- Webb, Paul, 42 Church St., New Haven, Conn., Insurance.
- White, Vernon Ollis, 219 South Main St., Attleboro, Mass., Jeweller.

1907

CLINTON KING, Secretary.

- \*Armstrong, Arthur H.,  $K \Sigma$ , died December 22, 1908.
- Bartlett, Earle G.,  $\Phi K \Phi$ ,  $\Phi \Sigma K$ , Kamehameha Schools, Honolulu, T. H., Instructor in Science and Mathematics.
- Caruthers, John T., R. F. D. No. 6, Columbia, Tenn.
- †Chace, Wayland F., C. S. C., Address Unknown.
- Chapman, George H.,  $A \Sigma \Phi$ , Amherst, Mass., Assistant Botanist, Massachusetts Agricultural Experiment Station. M. Sc., Massachusetts Agricultural College, 1910.
- Chapman, Joseph O.,  $K \Sigma$ , 18 Stevens St., North Andover, Mass., Farmer.
- Clark, Milford H., Jr., C. S. C., City Hall, Buffalo, N. Y., Assistant City Forester.

1907

- Cutter, Frederick A.,  $\Phi \Sigma K$ , 40 Elm St., Orange, N. J., Forester.
- Dickinson, Walter E.,  $\Phi K \Phi$ ,  $\Phi \Sigma K$ , 1308 Nashville Ave., New Orleans, La., Sugar Chemist.
- Eastman, Jasper F.,  $\Phi K \Phi$ , Morrisville, N. Y., Agronomist, New York State School of Agriculture. M. Sc., University of Illinois, 1910.
- Hartford, Archie A., New Boston, N. H., Principal New Boston High School.
- Higgins, Arthur W.,  $\Phi K \Phi$ ,  $K \Sigma$ , Westfield, Mass., Florist.
- King, Clinton,  $\Phi K \Phi$ , Q. T. V., 28 Sagamore St., Dorchester, Mass. Business address, Rooms 611-613, 6 Beacon St., Boston, Mass., Lawyer. LL. B., Boston University, 1910.
- Livers, Miss Susie D., 63 Dana St., Cambridge Mass., with Ginn & Co., Publishers, Boston, Mass.
- Parker, Charles M.,  $\Phi K \Phi$ , Q. T. V., Brookfield, Mass., Farmer.
- Peters, Frederick C.,  $\Phi \Sigma K$ , Ardmore, Pa., Landscape Forester and Entomologist.
- Shaw, Edward H.,  $\Phi \Sigma K$ , 275 Washington St., Belmont, Mass., Market Gardener.
- Summers, John N., C. S. C., Melrose Highlands, Mass., Bureau of Entomology, U. S. Department of Agriculture. Ph. D., Massachusetts Agricultural College, 1911.
- Thompson, Clifford B.,  $\Phi \Sigma K$ , Selama, Perak, Malay, Manager Rubber Plantation.
- Walker James, H.,  $\Phi \Sigma K$ , 65 Mapes Ave. Business address, City Hall, Newark, N. J., City Forester.
- Watkins, Fred A.,  $\Phi \Sigma K$ , West Millbury, Mass., Market Gardener.

1907

- Watts, Ralph J.,  $\Phi K \Phi$ ,  $\Phi \Sigma K$ , Amherst, Mass., Secretary to the President Massachusetts Agricultural College.
- Wood, Herbert P., C. S. C., Box 208, Dallas, Texas, Bureau of Entomology, U. S. Department of Agriculture.

## NON-GRADUATES

- Amsden, Eugene C., Gardner, Mass.
- Arimoto, Shintarc, Furumachi, Mimasaka, Japan, Agriculturalist.
- Chadwick, Clifton H.
- \*Chapman, William S., Deceased.
- Clementson, Lewis T., 105 Fairfield St., Worcester, Mass., Clerk.
- Curtis, Jesse Gerry, 321 Coltart Sq., Pittsburgh, Pa., Assistant City Forester.
- Curtis, Walter L., Scituate, Mass.
- Dearth, George A., Sherborn, Mass. Real Estate.
- Denham, Edwin T., Halifax, Mass.
- Dudley, Fred S., Toledo, Ohio, (505 St. Claire St.)
- Engstrom, Nils, 16 Whipple St., Worcester, Mass.
- †Finkelstein, David. Address unknown.
- †French, Vida R. Address unknown.
- Gould, Harry W., Millbury, Mass., Construction Reporter.
- Green, Herbert H., Spencer, Mass., Florist.
- Hall, Walton, Jr., Moodus, Conn., Manufacturer.
- Hanson, Stuart W., Roxbury, Mass., (73 Munroe St.)
- Jones, Arthur M., Ludlow, Mass.
- †Kalina, Jacob. Address unknown.
- Knox, Harry C., Wellesley, Mass.

1908

- Lanigan, William J., Rockland, Mass.  
 Leighton, Carl, Lowell, Mass.  
 Leominster, William, Acushnet Station, New Bedford, Mass., Chauffeur.  
 Lincoln, Ernest A., Fall River, Mass.  
 Marran, Bernerd J., Great Barrington, Mass., Electrical Tester.  
 \*Perkins, Edward C., died June 20, 1904.  
 Pierce, Henry T., Millbury, Mass.  
 Pray, Rutledge P., Natick, Mass.  
 Raitt, John A., 524 W. 123d St., New York City.  
 Rice, Charles A. A., Springfield, Mass., (146 Bowles St.)  
 Searle, George W., 21 Kellogg St., Westfield, Mass., Clerk of Court, Newspaper Reporter.  
 Shaw, Chester L., 88 Pearl St., Middleboro, Mass., Clerk.  
 Shaw, Frank E., 626 Crescent St., Brockton, Mass., Foreman.  
 Shuttleworth, Edwin L., Lawrence, Mass., (30 Summer St.)  
 Smith, George F., Barre, Mass., Farmer.  
 Stoddard, Calder S., Canton, Mass.  
 Whitney, John F., 13 Perkins St., St. Johnsbury, Vt., Civil Engineer.

1908

JAMES A. HYSLOP, Secretary.

- †Allen, Charles F., C. S. C., General Delivery, Sioux City, Iowa, Salesman.  
 Alley, Harold E., K Σ, Box 62, Spreckels, Cal., Assistant Plant Pathologist, Spreckels Sugar Experiment Station.  
 Anderson, John A., Φ Σ K, Montclair, N. J., Forester, Shade Tree Commission.

1908

- \*Anderson, Kenneth F., died May, 1911, in Philippine Islands.  
 Bailey, Ernest W., Φ K Φ, K Σ, 605 Michigan Ave., Urbana, Ill., Associate in Pomology and Plant Breeding, University of Illinois. M. Sc., University of Illinois, 1909.  
 Bangs, Bradley W., C. S. C., Carteret, N. J., Chemist, American Chemical Co.  
 †Barry, Thomas A., Φ K Φ, C. S. C., Schenectady, N. Y., General Electric Company.  
 Bartholomew, Miss Persis, Westboro, Mass., Farmer.  
 †Bates, Carlton, K Σ, 1628 Columbia Road, Washington, D. C., Bacteriologist, Bureau of Chemistry, U. S. Department of Agriculture.  
 Chapman, Lloyd W., Q. T. V., 724 4th Ave. North, Great Falls, Montana, Assayer and Chemist.  
 Chase, Henry C., C. S. C., Swampscott, Mass. Business address, State St., Lynn, Mass.  
 Clark, Orton L., Φ Σ K, Amherst, Mass.  
 Cobb, George R., C. S. C., Kingston, R. I., Assistant Professor of Horticulture and Athletic Director, R. I. College of Agriculture and Mechanic Arts.  
 †Coleman, William J., C. S. C., 1182 Broad St. Business address, City Hall, Newark, N. J., Shade Tree Commission.  
 †Cummings, Winthrop A., Q. T. V., 721 Belden Ave., Chicago, Ill., Foreman Lincoln Park.  
 Cutting, Roy E., Φ Σ K, 33 Phillips St., Providence, R. I., Salesman.  
 Daniel, John, Φ K Φ, Q. T. V., West Barnstable, Mass., Farmer.  
 Davenport, S. Lothrop, Φ K Φ, K Σ, North Grafton, Mass., Fruit Grower.

1908

- Davis, Paul A.,  $\Phi K \Phi$ ,  $\Theta \Phi$ ,  
100 Canton St., Lowell, Mass.
- Dolan, Clifford, Windsorville, Me.,  
Farmer.
- Eastman, Perley M., 84 Jefferson  
St., Albany, N. Y., Assistant  
Inspector New York State De-  
partment of Agriculture.
- Edwards, Frank L.,  $\Phi \Sigma K$ , Bucks-  
port, Me., Teacher and Farm  
Superintendent.
- Farley, Arthur J., Q. T. V.,  
New Brunswick, N. J., Assistant  
Horticulturalist, New Jersey  
Agricultural Experiment Sta-  
tion.
- †Farrar, Park W.,  $K \Sigma$ , Rogerson,  
Idaho, Civil Engineer, Salmon  
River Dam.
- †Flint, Clifton L.,  $K \Sigma$ , Corvallis,  
Ore., Instructor in Landscape  
Gardening Oregon Agricultural  
College.
- Gillett, Chester S.,  $\Phi K \Phi$ ,  $K \Sigma$ ,  
Box 244, Salinas, Cal., Exper-  
iment Station.
- Gillett, Kenneth E.,  $\Phi K \Phi$ ,  $\Phi \Sigma K$ ,  
Southwick, Mass., Nurseryman.
- Gowdey, Carlton C.,  $\Phi K \Phi$ , C. S.  
C., Entebbe, Uganda, British  
East Africa, Government Ent-  
omologist.
- Hayes, Herbert K.,  $\Phi K \Phi$ ,  $K \Sigma$ ,  
63 Canner St. Business address,  
Connecticut Agricultural Exper-  
iment Station, New Haven,  
Conn., Plant Breeder.
- Howe, William E., Marlboro,  
Mass., Farmer.
- Hutchings, Frank F., Q. T. V.,  
Old Saybrook, Conn., Teacher.
- Hyslop, James A., Q. T. V., 860  
North Mulberry St., Hagerstown  
Md., Bureau of Entomology,  
U. S. Department of Agriculture.  
M. Sc., Washington State Col-  
lege, 1911.

1908

- Jackson, Raymond H.,  $\Phi \Sigma K$ ,  
Amherst, Mass. Merchant.
- Jennison, Harry M., C. S. C.,  
722 Grant Ave., Bozeman,  
Mont., Teacher of Botany,  
Montana State College.
- Johnson, Fred A., C. S. C.,  
Washington, D. C., Bureau of  
Entomology, U. S. Department  
of Agriculture.
- Jones, Thomas H.,  $\Phi K \Phi$ , Q. T. V.,  
Experiment Station, Rio Pied-  
ras, P. R., Entomologist.
- Larned, Adelbert J. Q. T. V.,  
Lyonsville, Mass., Farmer.
- Larsen, L. David,  $\Phi K \Phi$ ,  $K \Sigma$ ,  
Honolulu, T. H., Plant Path-  
ologist.
- Liang, Lai Kuei, Assistant Forester  
for Republic of China, Peking,  
China.
- †Miller, Danforth P.,  $K \Sigma$ , 149  
Broadway, New York City,  
Manager Sales Department,  
American Nursery Company.
- †Paige, George, Q. T. V., Address  
unknown.
- Parker, John R.,  $K \Sigma$ , Box 301,  
Bozeman, Mont., Assistant  
Entomologist, Montana Agri-  
cultural Experiment Station.
- Philbrick, Edwin D.,  $\Phi \Sigma K$ , 171  
Kirby Ave. Business address,  
City Hall, Detroit, Mich., City  
Forester.
- Reed, Horace B.,  $K \Sigma$ , Greenwich,  
Conn., Farm Foreman.
- Regan, William S.,  $K \Sigma$ , 136 State  
House, Boston, Mass., Assistant  
State Nursery Inspector.
- Sawyer, William F., Q. T. V.,  
Sterling Junction, Mass., Arch-  
itectural Draughtsman.
- Shattuck, Leroy A., C. S. C.,  
Pepperell, Mass., Farmer.
- Thurston, Frank E.,  $\Phi \Sigma K$ , Trini-  
dad, Cuba, Superintendent for  
Trinidad Sugar Co.

1908

- Turner, Miss Olive M.,  $\Phi K \Phi$ ,  
22 Spaulding St., Amherst,  
Mass.
- Turner, William F.,  $\Phi K \Phi$ , Q. T.  
V., Auburn, Ala., Assistant  
Entomologist Alabama Experi-  
ment Station.
- Verbeck, Roland H.,  $\Phi \Sigma K$ , Kezar  
Falls, Me., Principal Parsonsfield  
Seminary.
- Warner, Theoren L.,  $\Phi K \Phi$ , Q. T.  
V., U. S. Coast and Geodetic  
Survey, Washington, D. C.
- †Waugh, Thomas F., Q. T. V.,  
7 Grant Court, Worcester,  
Mass., Teacher.
- Wellington, Joseph W., Q. T. V.,  
Trapelo Road, Waltham, Mass.,  
Farmer.
- Wheeler, Herman T., Q. T. V.,  
R. F. D. No. 1, Lexington,  
Mass., Farmer.
- Whiting, Albert L., Q. T. V.,  
908 West Illinois St., Urbana,  
Ill. M. Sc., R. I. State College of  
Agriculture and Mechanic Arts.  
1910, Ph. D., University of  
Illinois; 1912, Instructor and  
Research Assistant in Agron-  
omy, University of Illinois.
- †Whitmarsh, Raymond D.,  $K \Sigma$ ,  
Wooster, Ohio, Assistant Ento-  
mologist, Ohio Agricultural  
Experiment Station. M. Sc.,  
Massachusetts Agricultural Col-  
lege, 1911.
- Wright, Samuel J., Q. T. V.,  
Amherst, Mass., Farmer.

### NON-GRADUATES

- Allen, Herbert C., East North-  
field, Mass.
- Austin, Frank L., 4320 Guilford  
Ave., Indianapolis, Ind.

1908

- Bartlett, Louis W., 87 Cochrane  
St., Chicopee Falls, Mass., Ac-  
countant.
- Bennett, Ernest V., Malden, Mass.
- Blake, Rodman R., East Pepperell,  
Mass., Machinist.
- Blakeley, Franklin C., 129½ State  
St., Newburyport, Mass.
- Browne, Marcus M., Marlboro,  
Mass., Farmer.
- Caldwell, John S., 141 Milk St.,  
Boston, Mass., Insurance.
- Carter, Henry R., 919 Main St.,  
Worcester, Mass., Farmer.
- Cox, Leon C., 204 Huntington  
Ave., Boston, Mass.
- Damon, Henry F., Belchertown,  
Mass.
- Draper, James E., Bloomingdale,  
Worcester, Mass., Nurseryman.
- Edmands, Ernest C., 379 Lincoln  
Ave., Cliftondale, Mass.
- Fullam, Charles F., North Brook-  
field, Mass.
- Gold, Frank L., Torrington, Conn.,  
Teacher.
- Goodwin, Chester L., Brockton,  
Mass., (73 Laureston St.)
- Hamburger, Amos F., Hyde Park,  
Mass.
- Lacouture, George L., Millbury,  
Mass., Grocer.
- Negus, Philip H., Fall River,  
Mass.
- †Pagliery, Jose Cicilio, Address  
unknown.
- Potter, John Sherman, Y. M. C. A.,  
Milwaukee, Wis., Church Sex-  
retary.
- Wheeldon, Albert J., 137 Vernon  
St., Worcester, Mass.

## 1909

- ORWELL B. BRIGGS, Secretary.
- Alger, Paul E., C. S. C., Granby, Conn., Farmer.
- Barlow, Waldo D.,  $\Phi \Sigma K$ , Helena, Mont., U. S. Forest Service.
- Barnes, Benjamin F., Jr.,  $\Theta \Phi$ , Holliston, Mass., Manager of Pine Crest Farm.
- Bartlett, Oscar C., C. S. C., Phoenix; Ariz., Assistant State Entomologist. Ph.D. Mass. Agric. College, 1912.
- Briggs, Orwell B., Q. T. V., 1015 Fidelity Bldg., Baltimore, Md., Fertilizer Business.
- Brown, George M., Jr.,  $\Phi K \Phi$ , Q. T. V., 111 Duncan Bldg., Vancouver, B. C.
- Caffrey, Donald J., C. S. C., Connecticut Agricultural Experiment Station, New Haven, Conn., Entomologist.
- Cardin, Patricio P., Q. T. V., Agricultural Experiment Station, Santiago de las Vegas, Cuba. Chief of Department of Vegetable Pathology and Entomology.
- †Chase, Edward L., 85 Vine St., Somerville, Mass., Civil Engineer.
- Codding, George M.,  $\Phi \Sigma K$ , Fourth Avenue Bldg., New York City, Forester.
- Corbett, Lambert S., Q. T. V., Lexington, Ky., Assistant in Animal Husbandry, Kentucky Agricultural Experiment Station.
- Crosby, Harold P., C. S. C., Hyde Park, Vt., Teacher, superintendent of Schools.
- Crossman, Samuel S., Q. T. V., San Juan, P. R. Entomologist.
- Curran, David A., care of Maxwell & MacKenzie, Vegeville, Alberta, Canada, Civil Engineer.

## 1909

- Cutler, Homer, Auburn, Wash., Teacher, High School.
- †Fulton, Gordon R., C. S. C., 156 Beacon Hill Ave., Lynn, Mass., Salesman.
- †Geer, Myron F.,  $\Theta \Phi$ , 32 Moore Ave., Springfield, Mass.
- †Geer, Wayne E.,  $\Theta \Phi$ , Wethersfield, Conn., Teacher.
- Hathaway, Elmer F.,  $K \Sigma$ , 97 Huron Ave., Cambridge, Mass., with C. F. Hathaway & Son, Wholesale Bakers.
- Hsieh, En-Lung,  $\Phi K \Phi$ , Department of Agriculture and Forestry, Peking, China.
- Hubbard, Arthur W.,  $\Phi K \Phi$ , Q. T. V., Sunderland, Mass. Farmer.
- Ide, Warren L., Gardner, Mass., State Colony Farm Superintendent.
- Ingalls, Dorsey F., Q. T. V., Berkshire, Mass., Farmer.
- Jen, Huang, Q. T. V., Director of Agricultural Experiment Station, Mukden, Manchuria, China.
- Knight, Harry O., C. S. C., Gardner, Mass., Farmer.
- †Lindblad, Rockwood D.,  $\Phi K \Phi$ ,  $K \Sigma$ , 70 Phillips St., Albany, N. Y., Civil Engineer.
- MacGown, Guy E., Buckfield, Me., Tester for Dairy Association.
- Monahan, James V., C. S. C., 1101 Tremont Bldg., Boston, Mass., with Warren H. Manning Landscape Gardener.
- Neale, Harold J., C. S. C., 2 Sturgis St., Worcester, Mass., City Forester.
- Noble, Harold G.,  $K \Sigma$ , 2827 Linden Court, Chicago, Ill., Landscape Gardener, (Business address Marquette Bldg.)

1909

- Noyes, John, Q. T. V., 1101 Tremont Bldg., Boston, Mass., Landscape Gardener.
- O'Grady, James R., C. S. C., Littleton, N. H., Farmer.
- Oliver, Joseph T., Moravia, N. Y., Instructor in Agriculture, High School.
- Phelps, Harold D.,  $\Phi K \Phi$ , West Brookfield, Mass., Farmer.
- Potter, Richard C., Q. T. V., Racine, Wis., Head of Department of Science, Racine College.
- Putnam, Charles S.,  $\Phi K \Phi$ ,  $\Theta \Phi$ , Walpole, N. H., Principal High School.
- Sexton, George F., Y. M. C. A. Bldg., Camden, N. J., Teacher.
- †Shamiae G. M. Address unknown.
- Smulyan, Marcus T., Amherst, Mass., Graduate Student Massachusetts Agricultural College.
- Thompson, Myron W.,  $\Phi \Sigma K$ , Cody, Wyo., U. S. Forest Service.
- Thomson, Jared B., C. S. C., Monterey, Mass., Farm Manager.
- Turner, Henry W., C. S. C., Ensenada de Mora, Cuba, Sugar Planter.
- Warner, Fred C., Q. T. V., Sunderland, Mass., Civil Engineer, U. S. Geodetic and Coast Survey.
- Waters, Theodore C., C. S. C., Rocky Hill, Conn., Farmer.
- Webb, Charles R., C. S. C., Shrewsbury, Mass., Farmer and Forester.
- Whaley, James S.,  $\Phi K \Phi$ , 65 N. Arlington Ave., East Orange, N. J. with Vacuum Oil Co.
- White, Charles H., North Uxbridge, Mass., Farmer.

1909

- White, Herbert L., Q. T. V., Maynard, Mass., First Clerk State Board of Agriculture, 136 State House, Boston, Mass.
- Willis, Luther G., Q. T. V., Agricultural Experiment Station Knoxville, Tenn., Chemist.
- Wilson, Frank H., C. S. C., Nahant, Mass., Florist.

### NON-GRADUATES

- Adams, William E., Chelmsford, Mass., Dairyman.
- Bardwell, Frank R., 18 Morgan St., Springfield, Mass.
- Bean, Thomas W., 208 Walnut St., Holyoke, Mass., Civil Engineer.
- Beebe, John Cleaveland, Thompson, Mont., Civil Engineer.
- Bent, George F., 673 Randolph Ave., Milton, Mass., Business.
- Brown, Eben H., Whitman St., R. F. D. 40B, Bridgewater, Mass., Farmer.
- Coleman, Leon N., Gardner, Mass.
- Cook, Walter A., Maple Farm, Tinley Park, Ill., Farm Manager.
- Cox, Alfred Elmer, Jr., Bridgewater, Mass., Shoe Manufacturer.
- Cronyn, Theodore R., Bernardston, Mass.
- Gates, Clarence A., 71 Florence St., Worcester, Mass.
- Handy, Leroy M., 15 Greenwood Ave., Worcester, Mass.
- \*Hibbard, Myron J., Deceased.
- Hillman, Arthur J., Hardwick, Mass.
- Kenney, Walter J., Lowell, Mass., (99 Washington St.)
- Lambert, Marjorie W., Bard Ave., West Brighton Staten Island, N. Y., Teacher and Farmer.
- Learned, Wilfred H., 117 High St., Florence, Mass., Farmer.



1910

- Lyman, Arthur D., Springfield, Mass., (129 Buckingham St.)
- Maps, Charles H., Long Branch, N. J., Lumber Dealer.
- Martin, Nelson L., Sharon, Mass.
- O'Donnell, John F., 17 Millbury St., Worcester, Mass.
- Paddock, Charles H., 1234 So Clarkson St., Denver, Colo. Contractor.
- Parsons, Egbert R., Lenox, Mass.
- Pearce, Ernest E., Woodland Terrace, Worcester, Mass.
- Randolph, Lucy A., Box 23, Dwight, Mass., Teacher.
- Richardson, George T., Jr., Middleboro, Mass.
- Smith, Alexander H., Nyack, N. Y.
- Stewart, Eri S., R. F. D., No. 3, Athol, Mass., Farmer.
- Strong, Anson, Colchester, Conn
- Sweet, Charles R., Worcester, Mass.
- Trainor, Owen F., 19 Bradley St., Worcester, Mass.
- Treat, Carlton Eddy, Fitzwilliam Depot, N. H., Farmer.
- Tucker, Horace N., Waterbury, Conn.
- Turner, Leroy H., P. & L. E. R. R., Pittsburgh, Pa.
- Wadsworth, Ralph E., Northboro, Mass.
- Whelpley, Walter M. 105 Jones St., Savannah, Ga., Chemist, Southern Cotton Oil Co.

1910

FRANK L. THOMAS, Secretary.

- †Allen, Rodolphus H., K Σ, 565 June St., Fall River, Mass.
- Annis, Ross E., Φ Σ K, 60 State St., Boston, Mass., Superintendent Perry Construction Co.

1910

- Armstrong, Robert P., Φ Σ K, Canton, N. Y., Professor of Horticulture, St. Lawrence University.
- Bailey, Dexter E., Φ K Φ, Θ Φ, Brookings, S. Dak., Dairy Chemist S. Dak. Agr. Exp. Station.
- Bailey, Justus C., Θ Φ, Holly Springs, Miss.
- Beeman, Francis S., K Σ, Box 253, Ware, Mass., Farmer.
- Blaney, Jonathan P., A Σ Φ, 237 Humphrey St., Swampscott, Mass., Business address, 1101 Tremont Bldg., Boston, Mass., Landscape Gardener.
- Brandt, Louis, K Σ, 20 Marie Ave., Everett, Mass.
- Brooks, Henry A., Φ Σ K, 1915 St. Paul St., Baltimore, Md., Draughtsman.
- Brooks, Sumner C., Φ K Φ, Φ Σ K, 65 Hammond St., Cambridge, Mass., Assistant and Graduate Student Department of Botany, Harvard University.
- Brown, Louis C., K Σ, Bridgewater, Mass., Farmer.
- Burke, Edward J., C. S. C., Hadley, Mass., Instructor in Agriculture Hopkins Academy.
- Clarke, Walter R., K Σ, Milton-on-Hudson, N.Y., Fruit Grower.
- Cloues, William A., Q. T. V., Wickliffe, Ohio, Foreman, Spring Grave Farm.
- Cowles, Henry T., Φ K Φ, Θ Φ, Rio Grande, P. R., Superintendent of Schools.
- Damon, Edward F., Φ Σ K, Upland, Cal., Manager and Inspector Upland Citrus Association.
- Dickinson, Lawrence S., Φ Σ K, Amherst, Mass., Superintendent of Grounds, M. A. C.

1910

- Eddy, Roger S., Q. T. V., 37 Parkman St., Dorchester, Mass., with D. Eddy & Sons.
- †Everson, John N., 124 North Spring Ave., St. Louis, Mo., Chemist.
- Fiske, Raymond J.,  $\Theta \Phi$ , Stoneham, Mass.
- Folsom, Josiah C.,  $\Theta \Phi$ , Billerica, Mass., Farmer.
- †Francis, Henry R., Q. T. V.
- French, Horace W.,  $\Phi \Sigma \Kappa$ , East Charlemont, Mass., Farmer.
- Haynes, Frank T.,  $\Phi \Kappa \Phi$ , Q. T. V., Sturbridge, Mass., Farmer.
- Hayward, Warren W.,  $\Kappa \Gamma \Phi$ , Millbury, Mass., Farmer.
- Hazen, Myron S.,  $\Kappa \Sigma$ , 51 Chambers St., New York City, Assistant Sales Manager, Agricultural Chemist, Coe-Mortimer Co.
- Holland, Arthur W.,  $\Kappa \Sigma$ , Shrewsbury, Mass., Farmer.
- †Hosmer, Charles I., C. S. C., Turners Falls, Mass., Civil Engineer.
- Johnson, William C., Q. T. V., 51 Chambers St., New York City, with Coe-Mortimer Co.
- Leonard, William E., Soledad, Cuba, Sugar Chemist.
- McLaine, Leonard S.,  $\Kappa \Sigma$ , Amherst, Mass.
- Mendum, Samuel W.,  $\Phi \Kappa \Phi, \Theta \Phi$ , 312 No. Mills St., Madison, Wis., University of Wisconsin.
- Nickless, Fred P.,  $\Theta \Phi$ , Bureau of Agriculture, Philippine Islands.
- Oertel, Charles A., Woronoco, Mass., Farm Superintendent.
- Partridge, Frank H.,  $\Phi \Sigma \Kappa$ , Kamehameha Schools, Honolulu, T. H., Assistant Agriculturalist.
- Paulsen, George W.,  $\Kappa \Sigma$ , West Brookfield, Mass., Principal High School.

1910

- Schermerhorn, Lyman G., Q. T. V., Bozeman, Mont., Assistant Horticulturist, Montana Agricultural College and Experiment Station.
- Thomas, Frank L., Q. T. V., Amherst, Mass., Graduate Student, Massachusetts Agricultural College.
- Turner, Edward H., Q. T. V., Randolph Center, Vt., Teacher.
- Urban, Otto V. T.,  $\Kappa \Sigma$ , Box 567, Savannah, Ga., Chemist.
- Vinton, George N., Sturbridge, Mass., Farmer.
- Waldron, Ralph A., Q. T. V., State College, Pa., Instructor in Botany.
- Wallace, William N., Amherst, Mass., Orchardist.

#### NON-GRADUATES

- Bartlett, Leslie C., South Hadley Falls, Mass.
- Bigelow, Windsor H., Princeton, Mass.
- Burrell, Ralph P., South Weymouth, Mass., Clerk.
- Call, Almon Eugene, 20 Beacon Hill Ave., Lynn, Mass., Chemist.
- Cary, William E., Gansevoort, N. Y., Farmer.
- Chaffee, Alfred B.
- \*Chase, George B., Deceased.
- Curtis, William E., 4 Fern St., Worcester, Mass.
- Drohan, Joseph C., Belchertown, Mass.
- Eldridge, Cecil V., Harwichport, Mass.
- Faelten, Willibald C., 71 Crawford St., Boston, Mass.
- Gould, Harold A., 58 Magazine St., Cambridge, Mass.
- Hastings, David B., New York Mills, N. Y.

1911

- Hatch, William M., 241 Maple St.,  
Springfield, Mass.
- Howe, Chester L.
- Huang, Chen-Hua, 86 Buckingham  
St., Cambridge, Mass.
- †Kelley, Albert C. Address un-  
known.
- Kelly, Edward N., care of Lyman  
School, Westboro, Mass.
- Leonard, Leavitt E., Pittsford  
Mills, Vt., Farmer.
- Lightbody, Winfred C., South  
Framingham, Mass., Account-  
ant.
- Lipman, Isaac B., Woodbine, N. J.
- McFarlane, George E.
- Moore, Harold I., 154 Grove Ave.,  
Leominster, Mass., Teacher.
- Newcomb, Raymond W., Manila,  
Philippine Islands.
- Orr, Lewis J., 9 Lewis St., Port-  
land, Me.
- Orr, Philip E., 9 Lewis St., Port-  
land, Me.
- Robb, Allen J., R. F. D., No. 2,  
Ludlow, Mass., Farmer.
- Rockefeller, Harlan V.
- Rockwood, Albert F., Milton,  
N. H., Civil Engineer.
- Smith, Halliday S.
- Smith, Stanley S., Athol, Mass.
- Stalker, William Alexander, Fram-  
ingham Center, Mass.
- Stockwell, Chellis W., Athol,  
Mass., Entomologist.
- Sullivan, Arthur J., Dalton, Mass.
- Taylor, Israel H., Leverett, Mass.,  
Teacher.
- Woodward, Walter F., 794 Main  
St., Worcester, Mass., Clerk.

1911

- Adams, James F., Q. T. V.,  
University Club, State College,  
Pa., Instructor in Botany.

1911

- Allen, Park W.,  $\Phi \Sigma \kappa$ , Westfield,  
Mass., Insurance and Real Es-  
tate.
- Baker, Herbert J.,  $\kappa \Sigma$ , Amherst,  
Mass., Expert in Farm Manage-  
ment.
- Barrows, Raymond C., Q. T. V.,  
Stafford Springs, Conn., Farmer.
- Bentley, Arnold G., Q. T. V.,  
193 Fairmount Ave., Hyde  
Park, Mass., Purchasing Agent,  
Becker Milling Machinery Co.
- Blaney, Herbert W., C. S. C.,  
237 Humphrey St., Swampscott,  
Mass., with Warren H. Manning,  
Landscape Designer, 1101 Tre-  
mont Bldg, Boston, Mass.
- Brown, Edgar M.,  $\theta \Phi$ , 333 Vine  
St., Hartford, Conn., City Park  
Department.
- Bursley, Allyn P.,  $\Phi \kappa \Phi$ ,  $\theta \Phi$ ,  
West Barnstable, Mass.
- Conant, Arthur T., Sunderland,  
Mass., Farmer.
- Damon, Charles M. C. S. C.,  
Haydenville, Mass.
- Davis, E. Norton,  $\Phi \kappa \Phi$ ,  $\beta \kappa \Phi$ ,  
Hampden, Mass., Farmer.
- Davis, Irving W.,  $\kappa \Sigma$ , Amherst,  
Mass., Graduate Student and  
Graduate Assistant in Bee-  
keeping, Massachusetts Agricul-  
tural College.
- Gilgore, Irwin C., Q. T. V., care  
of Lord & Webster Co., 248  
Commercial St., Boston, Mass.,  
Salesman.
- Hill, N. Herbert,  $\Phi \Sigma \kappa$ , 14 Park  
Place, Princeton, N.J., Farmer.
- Jenks, Albert R.,  $\beta \kappa \Phi$ , Spring-  
field, Mass., with Hampden Co.  
Improvement Association.
- Johnson, Leonard M.,  $\kappa \Gamma \Phi$ ,  
Newtown, Conn., Principal of  
High School.
- Labouteley, Gaston E.,  $\kappa \Sigma$ ,  
Three Rivers, Mass., Orchard-  
ing.

1911

- Larrabee, Edward A., Amherst, Mass., Assistant in Botany, Massachusetts Agricultural Experiment Station.
- Lull, Robert D.,  $\Phi \Sigma K$ , 162 Essex St., Beverly, Mass., Farm Manager.
- McGraw, Frank D., C. S. C., 56 Tecumseh St., Fall River, Mass.
- McLaughlin, Frederick A.,  $K \Sigma$ , Amherst, Mass., Assistant in Botany, Massachusetts Agricultural College.
- Morse, Henry B.,  $K \Sigma$ , Amherst, Mass., Graduate Student, Massachusetts Agricultural College.
- Nagai, Isaburo, Tokyo, Japan, Student.
- Nickerson, George P.,  $\Phi \Sigma K$ , Philippine Constabulary, Manila, P. I.
- Nielsen, Gustaf A., C. S. C., 35 Webster St., West Newton, Mass.
- Ostrolenk, Bernhard, Slayton, Minn., Teacher.
- Parsons, Samuel R.,  $\Phi K \Phi$ , Q. T. V., Amherst, Mass., Assistant in Mathematics and Military Science, Massachusetts Agricultural College.
- Patch, Roland H.,  $\Theta \Phi$ , Department of Agriculture, Cornell University, Assistant in Floriculture and Graduate Student.
- Pauly, Herman A.,  $K \Gamma \Phi$ , West Wrentham, Mass., Farmer.
- Pickard, Percy W.,  $\Phi K \Phi$ , Q. T. V., 43 Chatham St., Boston, Mass. with Bowker Fertilizer Company.
- Piper, Ralph W., Q. T. V., South Acton, Mass., Fruit Grower.
- Prouty, Philip H., Q. T. V., Shrewsbury, Mass., Farmer.

1911

- Racicot, Philius A.,  $\Phi \Sigma K$ , 51 Chambers St., New York City with Coe-Mortimer Co., Manufacturers of Fertilizers.
- \*Robinson, Ralph C., died October 23, 1912, at Boston, Mass.
- Sharpe, Arthur H.,  $K \Sigma$ , Ridgeville, Ontario, Canada, Landscape Architect.
- Smith, Clarence A., Q. T. V., State College, Pa., Assistant in Chemistry.
- Smith, Raymond G., Amherst, Mass., Graduate Assistant in Botany, Massachusetts Agricultural College.
- Stevenson, Lomas O., C. S. C., Amherst, Mass.
- Titus, Willard M. S.,  $\Phi \Sigma K$ , North Andover, Mass., Farm Manager.
- Warren, Edward E.,  $\Phi \Sigma K$ , Leicester, Mass., Farmer.
- Whitney, Raymond L., Q. T. V., Central Village, Conn., Farm Manager.
- Willard, Harold F.,  $\Phi \Sigma K$ , Mid-Pacific College, Honolulu, T. H., Teacher.
- Winn, Ervin L., Elizabeth, N. J., Superintendent Bowker Chemical Co.

#### NON-GRADUATES

- Armstrong, Ralph Henry, 116 Pleasant St., Holyoke, Mass., Forester.
- Bearse, Alvin Wellington, West Harwich, Mass.
- Becker, John, Jr., 18 Roxana St., Hyde Park, Mass.
- Bliss, William Henry, 177 Chestnut St., New Britain, Conn., Salesman.
- Brown, Irving Clarence, Dupont Powder Co., Emporium, Pa., Chemist.

1911

- Chadbourne, James Green, Bridgton, Maine.  
 Coash, William Henry, 305 Lowell St., Lawrence, Mass.  
 Coles, Chester Ernest, 28 Hodges St., Attleboro, Mass., Mechanic.  
 Daniels, Lewis Ernest, 15 Park St., Cambridge, Mass., Civil Engineer.  
 Davey, James Abram, Kent, Ohio.  
 Denslow, Raymond Albert, 316 Locust St., Beloit, Wis., Teacher.  
 Dudley, John Edward, Jr., 9 Franklin St., East Somerville, Mass.  
 Drury, Harold B., Farmer.  
 Fitzgerald, James Edward, Bondsville, Mass.  
 Grey, George Herbert, 79 Jefferson Ave., Chelsea, Mass., Salesman.  
 Gunn, Clarence Armstrong, Southampton, Mass., Farmer.  
 Hammond, Charles Philip, 7 Broad Street Place, Lynn, Mass., Civil Engineer.  
 Harrington, Henry Lorenzo, 40 Central St., Boston, Mass., Clerk.  
 Hazen, Jacob, Georgetown, Mass.  
 Hennessey, William Francis, 25 Waldeck St., Dorchester, Mass.  
 Henry, Willard Francis, Hopedale, Mass., Station Agent.  
 Howard, Frederick William, Norwichtown, Conn., Farmer.  
 Howe, Harold Hosmer, 111 Euclid Ave., Springfield, Mass., Civil Engineer.  
 Hyatt, Herbert Francis, 10 Arlington St., Leominster, Mass.  
 Lew, Gerard Nelson, 89 Mt. Hope St., Lowell, Mass.  
 †Liang, Ying Chi. Address unknown.  
 Loker, Walter Melvin, 193 Pond St., Natick, Mass.

1911

- †McGann, P. S. Address unknown.  
 McNayr, Rupert Stanley, Winston Salem, N. C.  
 Merrill, Charles Edward, 90 Curtis St., West Somerville, Mass.  
 Merrill, George Bates, 1083 Washington St., North Abington, Mass., Entomologist.  
 Moody, Chester, 228 Webster Ave., Chelsea, Mass.  
 †O'Connor, J. H. Address unknown.  
 Phipps, William Raymond, East Holliston, Mass., Postmaster.  
 Prouty, Frank Alvin, 129 13th St., Portland, Ore.  
 Robb, Gordon Howard, 44 Walter St., Salem, Mass., Student Massachusetts Institute of Technology.  
 Roberts, Charles Elliott, Amherst, Mass.  
 †Robinson, Sturgis M.  
 Rosenbaum, Joseph, Department of Plant Pathology, Ithaca, N. Y., Student.  
 Schmitz, Frank Julius, Thomaston, Conn., Civil Engineer.  
 Spencer, Howard, Belchertown, Mass., Farmer.  
 Tilton, George Albert, Wells Depot, Me., Farmer.  
 Wheeler, Ralph Elgin, 1461 Main St., Brockton, Mass.  
 Whittaker, Elmer Carlin, Ravenna, Ohio.  
 Williams, George Edmund, Belchertown, Mass.  
 Wood, Alton Palmer, 8 Washington Place, Braintree, Mass., Chauffeur.  
 Young, Donnell Brooks, North Hanover, Mass., Teacher.

## 1912

- Ackerman, Arthur J., Q. T. V., Amherst, Mass., Graduate Student Massachusetts Agricultural College.
- Baker, Horace M., K Σ, 274 Main St., Springfield, Mass., Real Estate.
- Beals, Carlos L., B K Φ, Amherst, Mass., Asst. Chemist, Massachusetts Agr. Experiment Station.
- Beers, Rowland T., C. S. C., Cromwell, Conn., Florist.
- Bent, William R., K Γ Φ, Princeton, Mass., Principal of High School.
- Bodfish, Edward H., 1101 Tremont Bldg., Boston, Mass., Landscape Gardener, with W. H. Manning.
- Boland, Eric N., Φ Σ K, 809 Broadway, South Boston, Mass.
- Brett, Alden C., K Σ, North Abington, Mass., Grain, Hay and Coal Business.
- Brown, Merle R., North Grafton, Mass., Farmer.
- Burnham, Arthur J. A Σ Φ, 53 Fairfield Ave., Holyoke, Mass.
- Burr, Frederick H., Θ X, Department of Agriculture, Rutgers College, New Brunswick, N. J.
- Carpenter, Jesse, Jr., K Σ, Turner Hill Farm, Ipswich, Mass., Orcharding.
- Castle, Fred A., Φ Σ K, Pittsfield, Mass. Landscape Gardener.
- Clapp, Raymond K., Θ X, Mineral Valley Farm, Westhampton, Mass., Fruit Grower.
- Curran, Daniel J., K Γ Φ, Mexico, N. Y., Agricultural Instructor in High School.
- Deming, Winfred G., Φ Σ K, Wethersfield, Conn., Farmer.
- Dodge, Albert W., Σ T Δ, South Hamilton, Mass., Landscape Forester.

## 1912

- Fagerstrom, Leon E., Q. T. V., Shrewsbury, Mass., with Beckenham & Miller, Landscape Architects, Broadway, N. Y.
- Fisherdick, Warren F., B K Φ, 108 South Pleasant St., Amherst, Mass., Stock Clerk, General Maintenance Dept., Massachusetts Agricultural College.
- Fitts, Frank O., Θ X, Kingston, R. I., Assistant Chemist, R. I. State College.
- Fitzgerald, John J., 645 Green Ave., Brooklyn, N. Y., General Chemical Co.
- Fowler, George S., Amherst, Mass., Graduate Assistant, Department of Chemistry, Massachusetts Agricultural College.
- Gallagher, James A., North Wilmington, Mass.
- Gaskill, Lewis W., C. S. C., Cromwell, Conn., Florist.
- Gelinas, Louis E., K Γ Φ, corner Fifth and Bellefield Ave., Pittsburgh, Pa., with Loudon Machinery Co.
- Gibbs, Robert M., care of Munson-Whitaker Co., Tremont Bldg., Boston, Mass., Forester and Tree Surgeon.
- Gibson, Lester E., K Σ, 35 Winthrop St., Melrose, Mass.
- Gray, Frank L., K Γ Φ, Box 18, Kingston, Mass., Florist.
- †Hall, Henry B.
- Hall, Horace W., 33 Broad St., Boston, Mass., Lumber Business.
- Hallowell, Ray N., K Σ, 381 Centre St., Jamaica Plain, Mass., Engineer, Boston Park Department.
- Hamblin, Stephen F., 1101 Tremont Bldg., Boston, Mass., with W. H. Manning, Landscape Designer.

- 1912
- Harlow, Joseph A.,  $\text{K } \Sigma$ , Turners Falls, Mass., Clerk.
- Heald, Jay M., Q. T. V., 9 Franklin St., Watertown, Mass. Farmer.
- Hemenway, Thomas,  $\Phi \Sigma \text{K}$ , West Palm Beach, Fla. Teacher.
- Hickey, Francis B. C. S. S., 35 Belmont St., Brockton, Mass.
- Hills, Frank B., Q. T. V., Bernardston, Mass.
- Holland, Henry L.,  $\text{K} \Gamma \Phi$ , Reading, Pa., Chemist, Reading Bone Fertilizer Co.
- Hubert, Benjamin F., Orangeburg, S. C., Director, Agricultural Department of State College.
- Kingsbury, Arthur F.,  $\Phi \text{K} \Phi, \Theta \text{X}$ , 63 Pine St., Middletown, Conn., with Rogers & Hubbard Co., Fertilizer Business.
- Lamson, Robert W., College Park, Md., Assistant in Chemistry and Bacteriology, Maryland Agricultural Experiment Station.
- Lin, Dau Yang,  $\Phi \text{K } \Phi$ , Yale Station, New Haven, Conn. Student in Forestry.
- Lodge, Charles A., C. S. C., 731 Leavenworth St., Manhattan, Kans., Assistant in Botany, Kansas State Agricultural College.
- Madison, Francis S., Q. T. V., East Greenwich, R. I., Farmer.
- Martin, James F.,  $\text{A } \Sigma \Phi$ , Amherst, Mass., Graduate Assistant in Entomology, Massachusetts Agricultural College.
- McGarr, Thomas A.,  $\text{K } \Gamma \Phi$ , 19 Portland St., Worcester, Mass.
- Merkle, George E., Kingston, R. I., Assistant Chemist and Agronomist, Rhode Island Experiment Station.
- Merrill, Fred S., C. S. C., Manhattan, Kan., Assistant Entomologist.
- 1912
- Moreau, Theodore J. Q. T. V., Marquette Bldg., Chicago, Ill., with American Park Builders, City Planning.
- Mueller, Alfred F.,  $\text{K } \Gamma \Phi$ , 703 South Tryon St., Charlotte, N. C., Landscape Architect.
- Noyes, Harry A.,  $\text{B } \text{K } \Phi$ , Amherst, Mass., Graduate Assistant in Chemistry, Massachusetts Agricultural College.
- O'Flynn, George B.,  $\text{K } \Gamma \Phi$ , 33 Hamilton St., Worcester, Mass., Student at Clark University.
- Parker, Ralph R.,  $\Phi \text{K} \Phi, \text{A } \Sigma \Phi$ , Amherst, Mass., Graduate Student. Assistant in Zoology, M. A. C.
- Pearson, Charles C.,  $\Phi \Sigma \text{K}$ , 149 Whitney St., Hartford, Conn., Salesman, Commercial Paper.
- Peckham, Curtis, C. S. C., Worcester, N. Y., Teacher.
- Philbrick, William E.,  $\Phi \Sigma \text{K}$ , 815 Steinway Hall, Chicago, Ill., with Jens Jensen, Landscape Architect.
- Pierpont, John E.,  $\text{A } \Sigma \Phi$ , Williamsburg, Mass., Tree Expert.
- Pratt, Marshall C.,  $\text{K } \Sigma$ , 1767 Middlesex St., Lowell, Mass.
- Puffer, Stephen P.,  $\text{A } \Sigma \Phi$ , North Amherst, Mass.
- Raymond, Arthur N.,  $\Sigma \text{T } \Delta$ , R. F. D. 6, Norwich, Conn., with Torrington Building Co., Torrington, Conn.
- Reed, Robert E.,  $\Theta \text{X}$ , 4008 Prairie Ave., Chicago, Ill., with Swift & Co.
- Robinson, Earle J., Q. T. V., Medford, Ore., Hill Crest Ranch.
- Rockwood, Lawrence P.,  $\Phi \text{K } \Phi$ , Bureau of Entomology, Washington, D. C., Entomological Assistant.

1912

- Sanctuary, William C.,  $\Theta X$ , Amherst, Mass., Graduate Student Massachusetts Agricultural College.
- Sellew, Lewis R., 38 Worcester St., Natick, Mass. With Mass. Highway Commission.
- Shaw, Ezra I.,  $K \Sigma$ , Hangan, Mont., U. S. Forest Service.
- Southwick, Benjamin G.,  $\Phi K \Phi$
- Stack, Herbert J., Wallingford, Conn. Submaster, High School.
- Terry, Leon, 242 Dickinson St., Springfield, Mass.
- Torrey, Ray E.,  $\Phi K \Phi$ , Grove City, Pa. Teacher of Biology in Grove City College.
- Tower, Daniel G.,  $\Phi \Sigma K$ , Amherst, Mass. Graduate Student M. A. C.
- Tupper, George W., C. S. C., 60 Round Hill Street, Roxbury, Mass.
- Turner, Howard A.,  $\Phi K \Phi$ , Bureau of Plant Industry, Salem, Ore.
- Wales, Robert W.,  $K \Sigma$ , Coe-Mortimer Co., 51 Chambers St., New York City, Traveling Salesman.
- Warner, Roger A.,  $\Theta X$ , Sunderland, Mass., Farmer.
- Weaver, William J., Highland, N. Y., Agricultural Teacher, High School.
- Whitney, Charles E., 13 Gold St., Wakefield, Mass.
- Wilbur, Emory S.,  $B K \Phi$ , Turner Hill Farm, Ipswich, Mass. Farmer.
- Wilde, Earle I.,  $K \Sigma$ , State College, Pa., Assistant in Landscape Gardening.
- Williams, Edward R., Q. T. V., Concord Junction, Mass.
- Williams, Silas,  $\Theta X$ , 74 Munroe St. Chicopee Falls, Mass., with Stevens Duryea Co.

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- Wood, Howard H.,  $\Phi \Sigma K$ , Codman Farm, Dorchester, Mass., Farmer.

### NON-GRADUATES

- Baird, Everett Jameson, 1 Harvard St., Worcester, Mass., Business.
- Cabot, George Dwight, Winchester, Mass., Business.
- Caldwell, Lawrence Sanborn, 85 North Common St., Lynn, Mass.
- Campbell, Clare Avery, North Eastham, Mass. Business.
- Clancy, Eugene Francis, South Hadley Falls, Mass., Salesman.
- Cohen, Harold, 103 Sycamore St., Somerville, Mass., Clerk.
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- Folger, Ernest Maynard, 39 Wilmington St., Montello, Mass., Civil Engineer.
- Frost, Newton John, 16 High St., Natick, Mass., Florist.
- Garelick, George, 280 Walnut St., Buffalo, N. Y.
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- Hall, Ralph Sawyer, Sturbridge, Mass.
- Hamilton, Percy, R. F. D. No. 4, Portland, Me.
- Heatley, David Buchanan, 371 Hanover St., Fall River, Mass., Tester for Massachusetts Experiment Station.



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- Hiltpold, Werner, 2 Clark St.,  
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Lloyd, Edward Russell, 48 Rutland  
St., Boston, Mass.  
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Messer, Alan I., 51 Hull Ave.,  
Pittsfield, Mass., Accountant.  
Norris, Edward J., 80 Tremont  
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- Oppel, Eugene Irving, 589 Monroe  
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Smith, Harrison Edward, 52  
Edwards St., Medford, Mass.  
Springer, Isaac, 15 Cotting St.,  
Boston, Mass., Student at  
Harvard University.  
\*Tucker, John W., died in March,  
1911.  
Tong, Ying-Hee, Tientsin, China.



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†Chapman E B '72	†Comins W H '82	Dacy A L '02	† R W '95
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†Dutton C K	'82	Fletcher S W	'96	Goldthwait J E	'85	Harlow F T	'93
†Dwight E W	'84	W	'92	†W J Jr	'92	H J	'93
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*Dyer E N	'72	ER	'87	D	'82	Harper W B	'96
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†HT	'96	*H J	'94	†G A	'04	Haskins H D	'90
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†Ellis E S	'76	Franklin H J	'03	†T	'01	†Hatch G S	'75
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†F L	'04	†J L	'74	*Green C D	'93	†Hathaway B O	'87
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†Endicott G	'80	†N J	'12	†I C	'94	Hayes H K	'08
†Engstrom N	'07	†W L	'90	†W H	'71	Haynes F T	'10
†Esip E T	'04	†Frothing'm T G	'75	†Greenman F H	'02	†Hayward A S	'06
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		Fuller E A	'90	Gregory E	'90	†R L	'96
		GE	'71	†J H	'93	†W W	'10
†Faelton W C	'10	Fulton E S	'04	†Grey G H	'11	†Hazen J	'11
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†Fahey J J	'04	†Furness G A	'73	Grover R B	'72	Heald J M	'12
Fairbanks H S	'95	Gallagher J A	'12	*Guild G W M	'76	†Healey G C	'73
Fairfield F H	'81	Gamwell E S	'01	†Gunn C B	'71	†Heasley D B	'12
†Falby F R	'97	Gardner J J	'05	†C A	'11	†Hemenway F E	'01
†Faneuf A G	'92	†Garelick G	'12	†W B	'77	†H D	'95
Farley A J	'08	†Garrett W E	'74	†Gurney V H	'01	T	'12
†Farnsworth R L	'97	Gaskill E F	'06	†Haffenreffer A F	'05	†Henderson E H	'95
†Farrar A D	'06	†L W	'12	Hague H	'75	F H	'93
†FA	'92	†M A	'86	†Haley G W	'92	†Hennessey W F Jr	'11
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†Ferren F A	'06	Geer M F	'09	H W	'12	*Herrick F S	'71
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\* Non Graduate.

Storrs LamsonGHJr 1903 Newton H D 1904	<b>GEORGIA</b> Athens White E D 1894 Atlanta Davis H C 1893 Noyes F F 1888 Stockbridge H E 1878 Augusta Cheney L L 1897 Milledgeville Scott E H 1906 Mt. Vernon Merrill F A 1899 Savannah Urban O V T 1910 *Whelpley WM 1909	<b>INDIANA</b> Elkhart *Maxon D C 1912 Fort Wayne Smith A B 1895 Indianapolis *Austin F L 1908 Windsor J L 1882 Woodbury HE 1889 La Fayette Potter W S 1876 Proulx E G 1903 Stone W E 1882 North Judson Chandler E S 1882	<b>Kezar Falls</b> Verbeck R H 1908 <b>Portland</b> Chapin W E 1899 *Hamilton P 1912 *Lightbody WC 1910 *Orr L J 1910 *Orr P E 1910 <b>Waterville</b> Parmenter GF 1900 <b>Wells Depot</b> *Tilton G A 1911 <b>Windsorville</b> Dolan C 1908
*Goodale R C 1906 Thomaston Schmitz F J 1911 Thompson *Kirby D W 1904 Torrington *Gold F L 1908 Raymond AN 1912 Wallingford Sellew M E 1896 Stack H J 1912 West Hartford Beach C E 1882 West Haven *Nourse S J 1887 Westport *Tuttle H F 1891 *Gorham F S 1892 Wethersfield Geer W E 1909 Deming W G 1912 Willimantic Dawson W A 1901 Windsor *Barber S H 1872 Woodbury Benedict J M 1874	<b>IDAHO</b> Caldwell Taylor A H 1882 Rogerson Farrar P W 1908	<b>IOWA</b> Oskaloosa Clark L F 1897 Sioux City Allen C F 1908 Storm Lake *Eastman G H 1871	<b>MARYLAND</b> <b>Baltimore</b> Biggs O B 1909 Brooks H A 1910 Pingree M H 1899 *Willard D 1882 <b>College Park</b> Lamson R W 1912 <b>Frederick</b> *Sharpe E H 1900 <b>Hagerstown</b> Hyslop J A 1908 *Zeller B S 1874 Zeller H M 1874 <b>Roland Park</b> Ladd E T 1905 <b>Ruxton</b> Wiley S W 1898 <b>Silver Spring</b> Billings G A 1895
<b>DISTRICT OF COLUMBIA</b> Washington Allen E W 1885 *Babbitt E G 1894 Bates C 1908 Griffin C H 1904 Hooker W A 1899 Johnston F A 1908 Knight H L 1902 Monahan A C 1900 *Morse E W 1894 *Racicot A A 1906 Rockwood LP 1912 Russell H M 1906 Simpson H B 1873 Warner T L 1908 West A M 1900	<b>ILLINOIS</b> Chicago Armstrong H J 1897 Bragg E B 1875 Brooks P C 1901 Cummings W A 1908 Dickinson CM 1895 Field J L 1892 Howe E G 1872 Kinney C M 1902 Moreau T J 1912 Nichols L A 1871 Noble H G 1909 Nye G F 1877 Philbrick WE 1912 Reed R E 1912 Shiverick A F 1882 Tirrell C A 1906 West M H 1903 Wilder J E 1882 Evanston *Mansfield GR 1897 Highland Park *Davidson R P 1892 Jacksonville *Alexander EP 1874 Lake Forest *Brydon R P 1906 Manteau Smith L W 1893 *Wright E M 1899 Tinley Park *Cook W A 1909 Urbana Bailey E W 1908 Gardner J J 1905 Whiting A L 1908 Waukegan *Hersem E W 1906	<b>KANSAS</b> Manhattan Ahearn M F 1904 Lodge C A 1912 Merrill F S 1912 Topeka Felt C F W 1886 <b>KENTUCKY</b> Lexington Corbett L S 1909 Maysville *Cochran R A 1882 <b>LOUISIANA</b> Baton Rouge Halligan J E 1900 New Orleans Dickinson WE 1907 <b>MAINE</b> Bangor *Crafts G E 1882 Biddeford *Luques E C 1882 Bridgeton *Chadbourne J G 1911 Buckfield MacGown GE 1909 Bucksport Edwards F L 1908 Guilford *Straw H D 1905 Kennebunk Rogers E 1892 North Perry *Washburn FP 1896	<b>MASSCHUSETTS</b> <b>Agawam</b> Porter W H 1876 <b>Allston</b> Sellew R P 1889 <b>Amherst</b> Ackerman A J 1912 Baker H J 1911 *Baker P R 1904 *Brown M H 1895 Beals C L 1912 *Bement J E 1886 Brooks W P 1875 Carruth H S 1875 Chapman GH 1907 Clark O G 1903 Cook J G 1903 Cowles H L 1871 *Dana G H 1901 Davis I W 1911 *Deady J E 1912 Deuel C F 1876 *Deuel F D 1882 Deuel J E 1892 *Dickinson J F 1885 Dickinson L S 1910 Fisherdick WS 1912 Fowler G S 1912 Franklin H J 1903 Gaskill E F 1906
<b>FLORIDA</b> Gainesville Flint E R 1887 Jacksonville Benson D H 1877 Miami Richmond SH 1871 Pierce Smith F J 1890 West Palm Beach Hemenway T 1912			

\* Non Graduate.

Gordon C E 1901	<b>Ashby</b>	<b>Boston</b>	<b>Boylston</b>
*Graves G G 1871	Hayward A I 1888	Annis R E 1910	Walker E J 1893
Hall A W Jr 1906	*Hubbard G H 1895	Averell F G 1894	<b>Bradford</b>
*Harrington F W	*Jefts M W 1876	*Bacon R A 1906	*Vance P C 1903
1872	<b>Ashfield</b>	Barry J M 1897	<b>Braintree</b>
*Harris F A 1903	*March A L 1900	Bodfish E H 1912	*Wood A P 1911
Haskell S B 1904	Sears J M 1876	Boland E H 1912	<b>Bridgewater</b>
Haskins H D 1890	<b>Assinippi</b>	Bowker W H 1871	*Brown E H 1909
*Heatley D B 1912	Jones F W 1882	*Brown F W 1887	Brown L C 1910
Holland E B 1892	<b>Athol</b>	Brown W C 1895	*Cox A E Jr 1909
Holland H D 1884	Caswell L B 1871	Caldwell S S 1908	<b>Brockton</b>
Howar l S F 1894	*DruryR W 1895	CarpenterTM 1902	*Baldus F G 1892
Jackson R H 1903	*Smith S S 1910	*Chipman F E 1882	*Belden W L 1905
KingmanMB 1882	*Stewart E S 1909	*Connelly T H 1906	*CummingsJF 1904
Larrabee E A 1911	*StockwellCW 1910	*Cox L C 1908	*Goodwin C L 1908
Lindsey J B 1883	<b>Attleboro</b>	*Crocker L Jr 1871	Hickey F B 1912
*Loomis F E 1878	*Alger I Jr 1889	*Dwight E W 1884	*Kelleher J 1904
*Martin H T 1903	Bliss H C 1888	*Faelton W C 1910	*Kennedy F H 1906
Martin J F 1912	*Coles C E 1911	*Foster S C 1906	*Peabody H E 1902
McCloud A C 1890	*Holman S M 1883	Gibbs R M 1912	*Shaw F E 1907
McLaine L S 1910	Holman S M 1883	Gilbert R D 1900	<b>Brookfield</b>
McLaughlin F A	Tompson H F 1905	Gilgore I C 1911	Parker C M 1907
1911	*White V O 1905	*Goessmann L E	<b>Cambridge</b>
Mills J K 1877	<b>Ayer</b>	1894	Blair J R 1889
Morse H B 1911	*Markham J 1906	*Goldberg G 1912	Brooks S C 1910
Noyes H A 1912	*Walsh T F 1905	GoldthwaitJE1885	*Daniels L E 1911
Osmun A V 1903	<b>Barnstable</b>	*Goodrich W F 1877	*Day G 1896
*Owen H 1883	*Hallet C W 1890	Hamblin S F 1912	*Gould H A 1910
Paige J B 1882	<b>Barre</b>	Hall H W 1912	HathawayEF 1909
Parker R R 1912	*Carter C M 1905	*Harrington H L	*Huang C 1910
Parsons S R 1911	Harwood P M 1875	1911	Miles A L 1889
Peters C A 1897	*Smith G F 1907	Holcomb C S 1905	*Rogers W B 1900
Regan W S 1908	*Smith J L 1881	Howard E C 1893	*Weed P L 1895
*Roberts C E 1911	<b>Beachmont</b>	Hunt J F 1878	<b>Canton</b>
Root L A 1901	*Otis W C 1900	*Jones N N 1882	*Curtis E W 1901
SanctuaryWG1912	<b>Belchertown</b>	*Keenan G F 1899	*Stoddard C S 1907
Shaw F B 1896	*Damon H F 1908	*Knowles W F Jr	*Wentworth E F
Smith P H 1897	*Dillon J 1903	1882	1889
Smith R G 1911	*Drohan D J C 1910	Livers S D (Miss)	<b>Cataumet</b>
*Smith W H 1884	*Spencer H 1911	1907	*Handy R S 1904
Smulyan M T 1909	*Waite H H 1889	*Lloyd E R 1912	<b>Chelmsford</b>
StevensonLO 1911	West H C 1892	Lovell C O 1878	*Adams W E 1909
Stone G E 1887	*Williams G E 1911	MacleodWAA1876	*Holder W S 1902
Thomas F L 1910	*Witt H H 1904	*MahoneyFW 1906	*Fletcher W C 1892
ThomsonHM 1892	<b>Belmont</b>	McConnelCW1876	Osterhout J C 1887
Toole S P 1895	Shaw E H 1907	Monahan J V 1909	*Park F W 1894
Tower D G 1912	<b>Berkshire</b>	Noyes J 1909	<b>Chelsea</b>
Tuckerman F 1878	Ingalls D F 1909	Osgood F H 1878	*Grey G H J 1911
Turner O (Miss)	<b>Bernardston</b>	Parker W C 1880	*Moody C 1911
1908	Hills F B 1912	*Peabody C H 1875	<b>Chester</b>
Walker L S 1905	*Cronyn T R 1909	Perry J R 1893	AldermanEH 1894
Wallace W N 1910	*Cushman R H1887	Pickard P W 1911	<b>Chicopee</b>
Watts R J 1907	<b>Beverly</b>	*Porter C A 1905	*Chapin C G 1887
Wellington C 1873	Lull R D 1911	*Rawson H W 1896	Crehore C W 1895
White E A 1895	*O'Neil W J 1905	Regan W S 1908	*Dole E J 1888
Wright S J 1908	Stanley F G 1900	Shultis N 1896	<b>Chicopee Falls</b>
<b>Andover</b>	*Wentzell W B 1895	Sleeper G W 1906	*Babbitt G H 1875
*Abbott C D 1906	<b>Billerica</b>	*Springer I 1912	*Bartlett L W 1908
*Clarke H L 1882	Folsom J C 1910	*Stearns R S 1875	Williams S 1912
Foster F H 1883	Hubbard D L 1889	Taylor A D 1905	<b>Cliftondale</b>
Holt J E 1888	*Ranlett C A 1897	Taylor F L 1890	*Edmands E C 1908
<b>Arlington</b>	<b>Blackstone</b>	*Taylor H M 1878	<b>Concord</b>
Frost H L 1895	*SouthwickAL 1871	Tucker F H 1876	*Barker C A Jr 1872
Patch G W 1905	<b>Bondsville</b>	*Walsh T F 1896	<b>Concord Junction</b>
*Robinson J A 1876	*Carmody J F 1903	Watson C H 1887	Leland W S 1873
Wyman J 1877	*Fitzgerald J E 1911	Wheeler H J 1883	Williams E R 1912
<b>Ashburham</b>		Wheeler W 1871	
*Brigham F W 1905		White H L 1909	
		<b>Boxboro</b>	
		*Richardson C H	
		1904	

\* Non Graduate.

<b>Cummington</b>	<b>Fairhaven</b>	<b>Halifax</b>	<b>Ipswich</b>
*Streeter A R 1894	Potter D C 1895	*Denham E T 1907	Carpenter J Jr 1912
<b>Dalton</b>	<b>Fall River</b>	<b>Hamilton</b>	*Kinsman W F 1875
*Bardin J E 1892	Allen R H 1910	Ware W C 1871	*Kinsman W Q 1898
*Sullivan A J 1910	*Haffenreffer A F	<b>Hampden</b>	Roper H H 1896
<b>Danvers</b>	1904	Davis E N 1911	Smith F A 1893
Marsh J 1895	*Heatley D B 1912	<b>Hanson</b>	Tashjian D B 1901
Woodman E E 1874	*Lincoln E A 1907	Barker L M 1894	Wilbur E S 1912
<b>Dartmouth</b>	McGraw F D 1911	<b>Hardwick</b>	<b>Jamaica Plain</b>
*Sherman H R 1897	*Negus P H 1908	Flagg C O 1872	*Dodge W B 1896
<b>Dedham</b>	Poole E W 1896	*Hillman A J 1909	Hallowell R N 1912
Marshall C L 1887	Poole I C 1896	Parker S R 1904	<b>Kingston</b>
<b>Deerfield</b>	Rice T 1888	<b>Hartsville</b>	Gray F L 1912
*Cole W R 1902	<b>Fitchburg</b>	*Bentley I W 1894	<b>Lawrence</b>
*Cowles E R 1906	Casey T 1901	<b>Harvard</b>	*Ayer W 1888
*Randolph L A 1909	Clark H D 1893	*Blanchard S P 1894	*Coash W H 1911
<b>Dorchester</b>	*Colton W W 1906	Peters A 1881	Cutter A H 1894
Averell F G 1894	Fisher J F 1871	<b>Harwichport</b>	*Fuller E A 1890
Brett W F 1872	Keith T F 1894	*Eldridge C V 1910	*Shuttleworth E L
Eddy R S 1910	<b>Florence</b>	<b>Hatfield</b>	Winchester J F 1875
*Hennessey H L 1911	*Learned W H 1909	*Graves E L 1905	<b>Leicester</b>
Johnson C H 1891	Otis H P 1875	Graves T Jr 1901	*Sanderson H T 1891
King C 1907	*Vallentine F M 1896	*Wells C O 1889	Warren E E 1911
Parker G L 1876	Warner S S 1873	<b>Hathorne</b>	*Whittemore J S
Swain A N 1905	<b>Framingham</b>	Preston C H 1883	1885
Wood H H 1912	*Curley W J 1896	<b>Haverhill</b>	<b>Lenox</b>
<b>Dover</b>	*Rogers H P 1888	Brooks F K 1888	*Parsons E R 1909
Chickering J H 1901	*Stalker W A 1910	*Greenman F H 1902	<b>Leominster</b>
*Colcord W R 1889	<b>Gardner</b>	<b>Haydenville</b>	Greene I C 1894
Parsons A 1903	*Amsden E C 1907	Damon C M 1911	*Hyatt H F 1911
<b>Dracut</b>	*Coleman L N 1909	<b>Heath</b>	*Lockey J M 1872
*Richardson J C 1905	Ide W L 1909	*Kinsman E E 1896	*Moore H I 1910
<b>Dwight</b>	Knight H O 1909	<b>Holden</b>	Snow G H 1872
*Randolph L A 1909	<b>Georgetown</b>	Graham C S 1892	<b>Leverett</b>
East Charlemont	*Hazen J 1911	<b>Holliston</b>	*Taylor I H 1910
French H W 1910	Gill	Barnes B F Jr 1909	<b>Lexington</b>
<b>East Dedham</b>	*Blake E E 1903	Smith S E 1899	Spaulding C H 1894
*Worthington A F	<b>Gloucester</b>	<b>Holyoke</b>	Wheeler H T 1908
1888	*Eaton H N 1892	*Armstrong R H 1911	<b>Lithia</b>
<b>Easthampton</b>	*Nauss C S 1892	*Baird C H 1906	Barrus G L 1903
*Hiltbold W 1912	<b>Granby</b>	Bartlett F G 1893	<b>Littleton</b>
Root W A 1895	Davis P E 1894	*Bean T W 1909	*Johnson C F 1894
Tannatt W C Jr 1906	<b>Great Barrington</b>	Burnham A J 1912	Munson W A 1905
<b>East Foxboro</b>	Dellea J M 1902	Ellsworth E A 1871	*Whitcomb N H 1890
*Greeley D B S 1901	Hull J B Jr 1891	*Ellsworth F L 1904	<b>Lowell</b>
<b>East Holliston</b>	*Marran B J 1907	*Ellsworth H B 1912	Davis P A 1908
*Phipps W R 1911	*Parker J S 1888	*Hill C H 1882	Kinney B A 1882
<b>East Northfield</b>	Turner F H 1899	*Kenfield C R 1882	*Leighton C 1907
*Allen H C 1908	<b>Greendale</b>	*Sanderson R W 1873	*Lew G N 1911
<b>Eastondale</b>	Ripley G A 1880	<b>Hopedale</b>	*Morey G 1878
Wood A H M 1906	<b>Greenfield</b>	*Clarke F S 1887	Pratt M C 1912
<b>East Pepperell</b>	Carpenter M A 1891	*Henry W F 1911	Sherman W A 1879
*Blake R R 1908	Clapp C W 1886	<b>Hudson</b>	<b>Ludlow</b>
<b>East Somerville</b>	Field H J 1891	Minott C W 1883	*Bernie A C 1897
*Dudley J E Jr 1911	*Flower A 1873	Stowe A N 1890	*Jones A M 1907
<b>East Wareham</b>	*Hinsdale R C 1888	<b>Huntington</b>	*Robb A J 1910
Franklin H J 1903	*Miller H L 1871	*Jones C W 1901	<b>Lynn</b>
<b>Enfield</b>	Smead H P 1894	Kirkland A H 1894	*Caldwell L S 1912
Chickering D 1876	*Zabriskie F H 1880	Munson M H 1900	*Call A E 1910
<b>Essex</b>	<b>Groton</b>	<b>Hyde Park</b>	*Chase W J 1902
*DuBois C M 1891	May F G 1882	*Becker J Jr 1911	*Dwyer E F 1895
<b>Everett</b>	<b>Hadley</b>	Bentley A G 1911	Fulton G R 1909
Brandt L J 1910	Burke E J 1910	*Hamburger A F	*Hammond C P 1911
*Crowell W R 1900	*Comins W H 1882	1908	Marsh J M 1887
	Montgomery A W	Waldron H E B 1879	
	1898		

\* Non Graduate.

<b>Lyonsville</b>	<b>Millbury</b>	<b>Northampton</b>	<b>Orange</b>
Larned A J 1908	Gifford J E 1894	Atkins E K 1900	Smith H F M 1881
<b>Malden</b>	*Gould H W 1907	*Brown C E 1871	<b>Otter River</b>
Bennett E V 1908	Hayward W W 1910	*Collins J D 1904	Stone G S 1886
*Clark W V 1881	*Lacouture G L 1908	*Dickinson E T 1894	<b>Palmer</b>
*Clarke G C 1901	*Pierce H T 1907	*Graves G H 1904	*Brainerd J W 1872
Morey H E 1872	*Pierce H C 1904	Hemenway H D	<b>Peabody</b>
<b>Marblehead</b>	<b>Milton</b>	1895	*Brown H L 1887
*Goldthwait W J Jr	*Bent G F 1909	Lehnert E H 1893	*Ferren F A 1906
1892	Ruggles M 1891	Lyman R W 1871	MacKintosh R B
Gregory E 1890	<b>Monson</b>	*Maynard J B 1890	1886
*Martin J 1887	Carpenter C W 1906	Morse A J 1894	<b>Pembroke</b>
*Weed W D 1892	Norcross A D 1871	*Parsons J W 1903	*Sawin R D 1904
<b>Marlboro</b>	<b>Montague</b>	Shores H T 1891	<b>Pepperell</b>
Brown F H 1900	*Lyman R R 1905	<b>North Andover</b>	Shattuck L A 1908
*Browne M M 1908	<b>Montello</b>	Chapman J O 1907	<b>Petersham</b>
Goodale D 1882	*Folger E M 1912	Titus W M S 1911	*Robinson F D 1895
Howe E D 1881	<b>Monterey</b>	<b>North Attleboro</b>	<b>Pittsfield</b>
Howe W L 1908	Thomson J B 1909	*Pond W H 1891	Castle F A 1912
*Shaughnessy J J	<b>Nahant</b>	*Rhodes E E 1905	*Coleman R P 1897
1887	Wilson F H Jr 1909	<b>Northboro</b>	Cooke T F 1901
*Stratton E N 1890	<b>Natick</b>	Allen J W 1897	*Fahey J J 1904
<b>Marshfield</b>	Annis R E 1910	*Falby F R 1897	Leslie C T 1901
Harlow F T 1893	*Cleland W F 1873	*Morse S F 1906	*Messer A I 1912
<b>Medfield</b>	*Frost N J 1912	Maynard S T 1872	O'Hearn G E 1904
*Mason A H 1895	*Loker W M 1911	Sparrow L A 1871	<b>Plymouth</b>
<b>Medford</b>	*Pray R P 1907	*Wadsworth R E	Cooper J W 1882
Barrett E W 1887	Sellew L R 1912	1909	*Shurtleff W D 1896
*Barstow W H 1874	<b>Needham</b>	<b>North Brookfield</b>	<b>Princeton</b>
*McLean J R 1912	*Bond R H 1887	*Fullam C F 1908	Bent W R 1912
Mills G W 1873	*Fowle S O 1892	<b>North Cambridge</b>	*Bigelow W H 1910
Perkins D E 1882	<b>New Bedford</b>	*Howe H F 1897	Crosby H D 1905
*Smith H E 1912	Allen G H 1871	<b>North Dartmouth</b>	<b>Quincy</b>
*Stillings L C 1890	*Dorman A R 1901	Poole E M 1903	Crane H E 1892
<b>Melrose</b>	*Lawton C F 1876	<b>North Eastham</b>	<b>Quincy Point</b>
Fisher W S 1898	*Leominster W 1907	*Campbell C A 1912	*Duffield W C 1894
Gibson L E 1912	Poole E W 1896	<b>North Easton</b>	<b>Randolph</b>
*Smith C W 1899	<b>Newburyport</b>	*Hanlon H C 1902	*Thayer B 1890
<b>Melrose Highlands</b>	*Blakeley F C 1908	<b>Northfield</b>	<b>Reading</b>
Bagley S C 1883	Howe W V 1877	Callender T R 1875	*Pearson G C 1890
Burgess A F 1895	*Johnson I H 1888	*Chamberlain P A	<b>Readville</b>
Lewis C W 1905	<b>Newton</b>	1892	Mann G H 1876
Morse W A 1882	Bunker M 1875	<b>North Grafton</b>	<b>Revere</b>
*Spurr F Y 1906	Clark A 1877	Brown M R 1912	*Hall A S 1880
Summers J N 1907	<b>Newtonville</b>	Davenport S L 1908	<b>Richmond</b>
<b>Methuen</b>	Baker D E 1878	Staples P F 1904	*Coleman R R 1897
Emerson H B 1892	Barry D 1890	<b>North Hadley</b>	<b>Rockland</b>
<b>Middleboro</b>	Peakes R W 1906	Clark J W 1872	*Lanigan W J 1907
*Richardson G F Jr.	<b>North Abington</b>	*Russell H O 1906	*Stoddard S H 1896
1909	Brett A C 1912	*Ryan A 1904	<b>Rockport</b>
*Shaw C L 1907	*Merrill G B 1911	<b>North Hanover</b>	*Lane W A 1893
*Williams J S 1895	Wales R W 1912	*Young D B 1911	*Saville J R 1892
<b>Middlefield</b>	<b>North Amherst</b>	<b>North Hatfield</b>	<b>Roslindale</b>
Lyman C E 1878	*Cows W D 1872	Field S H 1888	Davis F W 1889
<b>Middleton</b>	*Dickinson E H 1888	<b>North Scituate</b>	Noyes J 1909
*Knight J H 1905	*Eastman E B 1912	Wholly F D 1906	<b>Rowley</b>
<b>Milford</b>	Pitts F O 1912	<b>North Uxbridge</b>	Todd J H 1901
Curley G F 1893	Fulton E S 1904	White C H 1909	<b>Roxbury</b>
*Farrar A D 1906	Jones G 1903	<b>North Wilmington</b>	Belden E H 1888
*McCobb E F 1902	*Loomis H R 1888	Eames A G 1891	*Colby F W 1897
<b>Millbrook</b>	*Parsons H A 1882	Gallagher J A 1912	*Hanson S W 1907
*Walker A H 1902	Pray F C 1906	<b>North Woburn</b>	Mendum S W 1910
<b>Millis</b>	Puffer S P 1912	Arnold F L 1891	Tinkham C S 1903
*Adams E E 1902	<b>Norwood</b>	*Fittz A H 1897	Tupper G W 1912
Cook L A 1902			
Richardson E F 1887			

\* Non Graduate.

<b>Russell</b>	<b>South Hamilton</b>	<b>Sunderland</b>	<b>Warwick</b>
*Copeland A B 1886	Dodge A W 1912	Clark C G 1898	*Witherell G A 1904
<b>Rutland</b>	Dodge G R 1875	Conant A T 1911	<b>Watertown</b>
*Potter R D 1903	<b>South Peabody</b>	Hubbard A W 1909	*Davenport A M
<b>Salem</b>	Sleeper G W 1906	Hubbard C M 1892	1891
Dana H W 1899	<b>South Natick</b>	Hubbard G C 1899	Dickinson DW 1890
*Merrill C E Jr 1905	*Hunter H C 1897	*Russell F N 1890	Held J M 1912
*Robb G H 1911	*Thompson CL 1904	Smith G P 1879	*Ladd J 1905
<b>Salisbury</b>	<b>South Sudbury</b>	Warner F C 1909	*Spooner F A 1876
Bartlett J L 1897	Hall J C 1902	Warner R A 1912	<b>Waverley</b>
<b>Sandwich</b>	<b>South Weymouth</b>	*Williams A S 1890	*Jones C W 1901
Eldred F C 1873	*Burrell R P 1910	Williams F O 1890	<b>Wayland</b>
<b>Scituate</b>	*Reed F S 1875	Williams M H 1892	*Braman S M 1890
*Curtis W L 1907	<b>Southwick</b>	<b>Sutton</b>	<b>Wellesley</b>
<b>Sharon</b>	*Gillett E 1874	Gifford J E 1894	*Knox H C 1907
*Martin N L 1909	Gillett K E 1908	*Stockwell HG 1894	<b>Wellesley Farms</b>
<b>Sheffield</b>	<b>Spencer</b>	<b>Swampscott</b>	*Boutelle A A 1899
Boardman EL 1894	Bacon L H 1894	Blaney H W 1911	<b>West Acton</b>
Wakefield AT 1873	Bemis W L 1895	Blaney J P 1910	*Whitcomb AM 1894
<b>Shelburne</b>	*Green H H 1907	Chase H C 1903	<b>West Barnstable</b>
Taylor G E 1892	*Starr E J 1894	Mudge E P 1905	Bursley A P 1911
<b>Sherborn</b>	<b>Springfield</b>	<b>Taunton</b>	Daniel J 1908
*Dearth G A 1907	Bacon T S 1894	*King A 1871	Macomber EL 1901
<b>Shirley</b>	Baker H M 1912	Southwick AA 1875	<b>West Berlin</b>
Clark E T 1892	*Bardwell F R 1909	<b>Three Rivers</b>	Felton T P 1890
Fowler F H 1887	*Belden A M 1891	Labouteley G E	Nutting C A 1896
<b>Shrewsbury</b>	Birnie W P 1871	1911	<b>Westboro</b>
*Cook M E 1897	Boynon W T 1892	<b>Touisset</b>	Bartholomew P
Fagerstrom L E	Brown C L 1894	*Tinkham H B 1905	1908
1912	*Cole D P 1871	<b>Townsend</b>	Browne C W 1885
Harlow H J 1893	*Davis J A 1899	*Copeland WW 1904	*Kelly E N 1910
Holland A W 1910	*Faneuf A G 1892	<b>Turners Falls</b>	Nourse A M 1889
Prouty P H 1911	Geer M F 1909	*Farnsworth R L	<b>West Boylston</b>
Webb C R 1909	*Hatch W M 1910	1897	*Cheever H M 1903
<b>Shutesbury</b>	Howe G D 1882	*Goddard G A 1890	<b>West Bridgewater</b>
Hunting N J 1901	*Howe H H 1911	Harlow J A 1912	*Alger G W 1889
<b>Somerville</b>	Jenks A R 1911	Hosmer C I 1910	*Howard J C 1879
*Bruce E C 1905	Kramer A M 1896	<b>Upton</b>	<b>West Brookfield</b>
Chase E I 1909	Leonard G 1871	Whitney C A 1889	Paulsen G W 1910
*Cohen H 1912	*Lyman A D 1909	<b>Uxbridge</b>	Phelps H D 1909
Fowler H M 1894	*Meade W G 1882	*Hayward R L 1896	<b>West Dedham</b>
*Goodrich W F 1877	*Merritt W H 1887	<b>Vineyard Haven</b>	*Soule G W 1893
*Jones L P 1906	Myrick H 1882	*Crowell CA Jr 1900	<b>Westfield</b>
Rideout HN W 1887	*Pixley M S 1877	*Walker H E 1900	Allen P W 1911
<b>South Acton</b>	*Ransehausen L A	<b>Waban</b>	*Fowler J H 1886
Piper R W 1911	1905	Tupper B 1905	*Gowdy H M 1882
<b>Southboro</b>	Shaw E D 1872	<b>Wakefield</b>	Higgins A W 1907
*Phelps A A 1903	Smith B H 1899	Whitney C E 1912	*Searle G W 1907
<b>Southampton</b>	*Smith W A 1904	<b>Walpole</b>	*Tinker C A 1903
*Gunn C A 1911	*Swazey W W 1872	*Smith J R 1889	<b>Westford</b>
*Gunn W B 1877	Terry L 1912	*Robbins D W 1894	*Howard J H 1901
Parsons W A 1888	*Webster F W 1903	<b>Waltham</b>	Read H B 1895
<b>South Framingham</b>	*Wolcott H R 1898	*Swift G A 1871	<b>Westhampton</b>
*Lightbody WC 1910	<b>Sterling Junction</b>	Wellington J W	Clapp R K 1912
*Mayo W P 1884	Sawyer W F 1908	Willard G B 1892	*Higgins N F 1893
Monahan N F 1903	<b>Stockbridge</b>	<b>Ware</b>	<b>West Harwich</b>
<b>South Hadley</b>	Barnes H L 1905	Beeman F S 1910	*Bears A W 1911
Kinney A S 1896	<b>Stoneham</b>	*Buffington CO 1885	Nickerson J P 1898
Montague AH 1874	Fiske R J 1910	<b>Wareham</b>	<b>West Lynn</b>
<b>South Hadley Falls</b>	<b>Stoughton</b>	Stone A H 1880	Norton C A 1897
*Bartlett L C 1910	*Chapman J C 1899	<b>Warren</b>	<b>West Medway</b>
*Clancy E F 1912	<b>Sturbridge</b>	*Day W L 1885	Howe C S 1887
*Judd C A 1876	*Hall R S 1912	Hitchcock DG 1874	<b>West Millbury</b>
*Judd W H 1901	Haynes F T 1910	*Warriner A A 1873	Watkins F A 1907
*Smith R E 1905	Vinton G N 1910		

\* Non Graduate.



Westminster  
MossmanFW 1890  
West Newbury  
Grover R B 1872  
West Newton  
Bellamy J 1876  
Howard H M 1891  
Hoyt F S 1893  
Nielsen G A 1911  
West Roxbury  
\*Davis A 1895  
Manley L 1894  
West Somerville  
\*Merrill C E 1911  
Willis G N 1905  
West Springfield  
\*Bagg E O 1895  
\*Sprague C E 1905  
\*Sykes C S 1905  
West Sterling  
Shepard L J 1896  
West Stockbridge  
Tobey F C 1895  
Westwood  
Crane H L 1900  
West Wrentham  
Pauly H A 1911  
Whateley  
\*White H K 1888  
\*White L A 1889  
Williamsville  
\*Hemenway F E 1901  
Williamsburg  
Pierpont J E 1912  
Winchendon  
\*Adams G A 1889  
Winchester  
Allen H F 1897  
\*Cabot G D 1912  
\*Higgins W E 1903  
\*Huse F R 1889  
\*Perkins E L 1903  
Winter Hill  
\*Norris E J 1912  
\*Richardson H L 1903  
Rideout H N W 1887  
Wollaston  
\*Huntington R E 1905  
Melendy A E 1893  
Worcester  
Ackerman A J 1912  
\*Baird E J 1912  
\*Carter H R 1908  
\*Clementson L T 1907  
Cowles F C 1872  
\*Curtis W E 1910  
\*Dee J F 1912  
\*Draper J E 1908  
\*Engstrom N 1907  
\*Gates C A 1909  
Hague H 1875

\*Handy L M 1909  
\*Jones E S 1882  
Kimball F E 1872  
\*Leach F H 1876  
Marshall J L 1896  
McGarr T A 1912  
Moore H W 1896  
Morse R W 1902  
Neale H J 1909  
\*O'Donnell J F 1909  
O'Flynn G B 1912  
\*Parker C H 1893  
\*Pearce E E 1909  
\*Perry A D 1881  
\*Putnam H A 1882  
\*Russell E E 1891  
Swan R W 1879  
\*Sweet C R 1909  
ThompsonEE 1871  
\*ThompsonEF 1894  
\*ThompsonHA 1898  
\*Trainor O F 1909  
\*Vaughn R H 1895  
Waugh T F 1908  
\*Wheeldon A J 1908  
\*Woodward W F 1910  
Woronoco  
Oertel C A 1910

## MICHIGAN

## Detroit

Landers M B 1900  
Philbrick E D 1908

## East Lansing

Halligan C P 1903  
Lyman R P 1892  
Taft L R 1882

## Wyandotte

Suhlke H A 1905

## MINNESOTA

## Clayton

Ostrolenk B 1911

## Minneapolis

Whitney W C 1872

## St. Paul

Lee L K 1875

## MISSISSIPPI

## Holly Springs

Bailey J C 1910

## Jackson

Hubert Z T 1904

## MISSOURI

Kansas City  
WoodburyRP 1878

## St. Louis

Everson J N 1910  
\*Morse S L 1896

## MONTANA

## Bozeman

Cooley F S 1888  
Cooley R A 1895  
Jennison H M 1903  
Parker J R 1903  
Schermerhorn L G 1910

## Great Falls

CampbellCH 1879  
ChapmanLW 1908

## Hangar

Shaw E I 1912

## Helena

Barlow W D 1909

## Lamedeer

\*Eddy J R 1897

## Malta

\*Sanford G O 1894

## Miles City

Miles G M 1875

## Thompson

\*Beebe J C 1909

## NEBRASKA

## Columbus

DickinsonRS 1879

## Nebraska City

Dwyer C E 1902

## Norfolk

\*Sattler H C 1881

## NEW HAMPSHIRE

## Berlin

Taft W E 1890

## Centre Harbor

\*Slade D R 1876

## Derry Village

\*Ranney W H 1893

## Fitzwilliam Depot

\*Treat C E 1909

## Freedom

\*Brooks W C 1881

## Greenland

\*Harris L L 1882

## Hampton Falls

\*Healey G C 1873

## Littleton

CarpenterDF 1886

O'Grady J R 1909

Sullivan M J 1895

## Manchester

Gallagher J A 1912

## Milton

\*RockwoodAF 1910

## Nashua

Allen F S 1882

\*Bancroft J F 1872

Hammar J F 1896

Saunders E B 1902

\*Stevens F O 1906

## New Boston

Hartford A A 1907

## Peterboro

Bishop E A 1883  
Caldwell W H 1887

## Walpole

Putnam C S 1909

## Winchester

\*Allen E W 1894

## NEW JERSEY

## Arlington

\*Stearns H E 1897

## Belvidere

\*Paul A R 1904

## Boonton

\*Condit C D 1892  
Maynard H E 1899

## Camden

Sexton G F 1909

## Carteret

Bangs B W 1908

## East Orange

Fairfield F H 1881  
\*Jackson H S 1875  
Sawyer A H 1891  
Whaley J S 1909

## Elizabeth

Winn E L 1911

## Englishtown

Stockbridge F G 1892

## Hackensack

\*Ober F A 1872

## Hammonton

Myrick L 1878

## Jersey City

Bacon S C 1903  
Hastings A T 1906  
\*Wollheim E 1903

## Long Branch

\*Maps C H 1909

## Montclair

Anderson J A 1908  
\*Holmes S J 1882

## Newark

Coleman W J 1908  
Smith S L 1902  
Walker J H 1907  
Warden R D 1898

## New Brunswick

Blake M A 1904  
Burr F H 1912  
Farley A J 1908

## Orange

Cutter F A 1907

## Plainfield

Gay R P 1905  
\*Risley C E 1900

## Princeton

Hill N H 1911

## South Orange

\*Page H S 1892

\* Non Graduate.

<b>Union Hill</b>	<b>Larchmont</b>	<b>Port Chester</b>	<b>OREGON</b>
Baker J B 1901	*Bullard W E 1872	*Henderson E H 1895	<b>Corvallis</b>
<b>Woodbine</b>	<b>Little Falls</b>	<b>Rochester</b>	Flint C L 1908
*Lipman I 1910	*Oppel E I 1912	Hutchings J T 1889	Peck A L 1904
<b>NEW MEXICO</b>	<b>Maybrook</b>	<b>Roslyn</b>	Lewis C I 1902
<b>Claud</b>	Strain B 1906	West D N 1902	<b>Medford</b>
Stacy C E 1899	<b>Mexico</b>	<b>Saratoga Springs</b>	Robinson E J 1912
<b>Laplanta</b>	Curran D J 1912	*Goodenough H H	<b>North Portland</b>
Fisherdick C W 1887	<b>Milton</b>	1905	Chase W E 1887
<b>Roswell</b>	Clarke W R 1910	<b>Schenectady</b>	<b>Portland</b>
Yeaw F L 1905	<b>Moravia</b>	Barry J E 1901	Henshaw F F 1904
<b>NEW YORK</b>	Oliver J T 1909	Barry T A 1908	*Prouty F A 1911
<b>Albany</b>	<b>Morrisville</b>	<b>Spring Valley</b>	<b>Rogue River</b>
Eastman P M 1908	Eastman J F 1907	Curtis A C 1894	Chandler E P 1874
Felt E P 1891	<b>Mt. Lebanon</b>	<b>Syracuse</b>	<b>Salem</b>
Linblad R C 1909	*Allen E B 1897	Bowman C A 1881	Turner H A 1912
<b>Amsterdam</b>	<b>Newburgh</b>	<b>Washington Ville</b>	
Kelton J R 1905	Nourse D O 1883	Howell H 1885	
<b>Brooklyn</b>	<b>New York City</b>	<b>West Brighton</b>	
*Adams F E 1874	*Allen F C 1887	*Lambert M W 1909	
*Durling E V 1912	Ateshian O H 1886	<b>Worcester</b>	<b>PENNSYLVANIA</b>
Fitzgerald J J 1912	Ayres W 1886	Peckham C 1912	<b>Ardmore</b>
Foley T P 1895	Eaton J S 1898		Peters F C 1907
Frost A F 1900	Barrett J F 1875	<b>NORTH CAROLINA</b>	<b>Bethlehem</b>
Wright G H 1898	Bassett A L 1871	<b>Charlotte</b>	Shimer B L 1888
<b>Buffalo</b>	Beals A T 1892	Mueller A F 1912	<b>Carnegie</b>
*Barton C H 1894	Chapin H E 1881	<b>Mt. Holly</b>	*Phillips L 1903
Filer H B 1906	Codding G M 1909	*Nims L 1878	<b>Emporium</b>
Clark M H Jr 1907	Cutter J A 1882	<b>Red Springs</b>	*Brown I C 1911
*Paine A W 1887	DeLuce E 1896	Livermore R W 1872	<b>Farm School</b>
*Parker F I 1894	Eaton J S 1898	<b>Salem</b>	Bishop W H 1882
<b>Canton</b>	Eaton W A 1886	*McNayr R S 1911	Washburn J H 1878
Armstrong R P	Foot S D 1878		<b>Glenolden</b>
1910	Gay W W 1891	<b>OHIO</b>	Knapp E E 1888
*Townesley H M 1880	Hazen M S 1910	<b>Akron</b>	<b>Grove City</b>
<b>Cornwall-on</b>	Henderson F H 1893	*Cook J E 1894	Torrey R E 1912
<b>Hudson</b>	Hevia A A 1883	<b>Cleveland</b>	<b>Hanover</b>
Clapp F L 1896	Hull E T 1900	Howe C S 1878	*Charmsbury T H
<b>Deposit</b>	Johnson W C 1910	Staples H F 1893	1897
*Wheeler G W 1886	Leavens G D 1897	<b>Columbus</b>	<b>Harrisburg</b>
<b>Gansevoort</b>	Lewis H W 1895	Belden J H 1902	Craighead W H 1906
*Cary W E 1910	*Lumbard J E 1889	Jones R S 1895	Kellogg J W 1900
<b>Geneva</b>	Miller D P 1908	Lyman J F 1905	<b>Philadelphia</b>
Hodgkiss H E 1902	*Morris F W 1872	Plumb C S 1882	Claffin L C 1902
Wellington R 1906	Morse W L 1895	<b>Kent</b>	Crocker C S 1889
<b>Greenport</b>	*Parker J 1895	*Davey J A 1911	Fairbanks H S 1895
*Courtney H S 1899	Racicot P A 1911	<b>Ravenna</b>	Fiske E R 1872
<b>Greensville</b>	*Raitt J A 1907	*Whittaker E C	Powler A L 1880
*Hogan F W 1890	Rawson E B 1881	1911	Goessmann C I 1895
<b>Hastings-on</b>	Russell W D 1898	<b>Salem</b>	Lane C B 1897
<b>Hudson</b>	*Smith B S 1881	*Clark W J 1873	Moore R B 1888
*Woolson G C 1871	Tekirian B O 1885	<b>Toledo</b>	Tolman W N 1887
<b>Highland</b>	Thompson S C 1872	*Dudley F S 1907	<b>Pittsburgh</b>
Weaver W J 1912	*Urner F G 1877	<b>Wickliffe</b>	*Curtis J G 1907
<b>Hilton</b>	Wales R W 1912	Cloues W A 1910	Gelinas L E 1912
White H M 1904	Walker C M 1899	<b>Wooster</b>	*Turner L H 1909
<b>Ithaca</b>	Walker C F 1894	Whitmarsh R D	<b>Reading</b>
Gilbert A W 1904	*Warden J K 1902	1908	Holland H L 1912
Nagai I 1911	<b>New York Mills</b>	<b>OKLAHOMA</b>	<b>State College</b>
Patch R H 1911	*Hastings D B 1910	<b>Boley</b>	Adams J F 1911
*Rosenbaum J 1911	<b>Nyack-on-Hudson</b>	Hood W L 1903	Smith C A 1911
	*Dutcher J R 1899		Waldron R A 1910
	*Smith A H 1909		Wilde E I 1912
	<b>Pelham</b>		
	Whitaker C L 1905		
	<b>Philmont</b>		
	*Lindsay F B 1882		

\* Non Graduate.

## RHODE ISLAND

Allenton  
\*Thompson LI 1903  
Chepachet  
\*Sprague W A 1889  
East Greenwich  
Madison F S 1912  
Kingston  
\*Brett C E 1905  
Cobb G R 1908  
Damon S C 1882  
Hartwell B L 1889  
Kinney L F 1888  
Merkle G E 1912  
Pitts F O 1912  
Nayatt Point  
Hatch W B 1905  
Oaklawn  
Read F H 1896  
Pawtucket  
Russell H L 1890  
Providence  
Cushman E C 1905  
Cutting R E 1908  
Duncan R F 1886  
Hubbard H F 1878  
\*Luther G C 1871  
\*Smith J M 1874  
Woonsocket  
\*Rankin A B 1871

SOUTH  
CAROLINA

Columbia  
Young C E 1881  
Orangeburg  
Hubert B F 1912

## SOUTH DAKOTA

Brookings  
Bailey D E 1910  
Brigham A A 1878  
Sioux Falls  
Martin W E 1876

## TENNESSEE

Athens  
Taylor F P 1881  
Columbia  
Carruthers J T 1907  
Knoxville  
Willis L G 1909

## TEXAS

Dallas  
Wood H P 1907  
Houston  
Paige W C 1891  
Raymondville  
\*Wood A R 1891

Victoria  
\*Tyng C 1892  
\*Tyng G 1892

## VERMONT

Ascutneyville  
\*Bristol E F 1880  
Bellows Falls  
\*Kelley H T 1903  
Bethel  
\*Bass E L 1879  
Brattleboro  
\*Barrows F K 1873  
Burlington  
Hills J L 1881  
Jones C H 1890  
East Putney  
Alpin G T 1882  
Hyde Park  
Crosby H P 1909  
Northfield  
Sanborn M L 1905  
Taft W O 1906  
Pittsford Mills  
\*Leonard L E 1910  
Putney  
Campbell F G 1875  
Randolph Centre  
Turner E H 1910  
Richford  
\*Marvin S B 1894  
St. Johnsbury  
\*Whitney J F 1907  
Vernshire  
\*Taylor E E 1895  
Windsor  
North M N 1889

## VIRGINIA

Blacksburg  
Fletcher S W 1896  
Richmond  
Carpenter FB 1887  
French G T 1906

## WASHINGTON

Auburn  
Cutler H 1909  
Everett  
Quigley R A 1904  
Pullman  
\*West H L 1897  
Seattle  
\*Palmer R M 1886  
Spalding A W 1881  
South Bend  
Couden F D 1904  
Spokane  
\*Wood W 1881  
Tacoma  
Raymont R R 1904  
Strickland GP 1871

## WEST VIRGINIA

Morgantown  
Dacy A L 1902  
Wheeling  
Baker H 1900

## WISCONSIN

Beloit  
\*Denslow R A 1911  
Madison  
Mendum S W 1910  
Tottingham W E 1903  
Racine  
Potter R C 1909  
Milwaukee  
Carr W F 1881  
\*Potter J S 1908

## WYOMING

Cody  
Thompson M W 1909

## FOREIGN

Africa (South)  
Gowdey C C 1908  
Lounsbury CP 1894

## Asia

China  
Hsieh E L 1909  
Jen H 1909  
Liang L K 1908  
\*Tong Y H 1912

## India

Knight J B 1892  
Thompson CB 1907

## Japan

\*Arimoto S 1907  
Kuroda S 1895  
Mishima V Y 1888  
Nagai I 1911  
\*Okami Y 1889  
Saito S 1896  
Tsuda G 1896  
\*Yamamura K 1893

Phillipine Islands  
Edwards H T 1896  
\*Newcomb RW 1910  
Nickerson GP 1911  
Nickless F P 1910

## EUROPE

England  
Rice C L 1901  
Turkey  
Adjemian AG 1898  
Nersession PN 1903

## NORTH AMERICA

Canada  
Brown GM Jr 1909  
Curran D A 1909  
Higgins C H 1894  
\*McDonald F J 1892  
Sharpe A H 1911

## Costa Rica

\*Volio E T 1895

## Cuba

Cardin P P 1909  
Herreo J M 1890  
Leonard W E 1910  
Thurston F E 1908  
Turner H W 1909

## Hawaiian Islands

Back E A 1904  
Bartlett E G 1907  
\*Goodell J S 1894  
Larsen L D 1908  
\*Nowell A M 1897  
Partridge F H 1910  
Willard H E 1911

## Mexico

Canto Y H 1900  
Sastre S V 1896

## Panama

\*Nash E D 1871

## Puerto Rico

Armstrong W H 1899  
Beaman D 1899  
Cowles H T 1910  
Crossman S S 1909  
Jones T H 1908  
Smith R I 1901  
Tower W V 1903

## SOUTH AMERICA

Almeida A L 1887  
Almeida L J 1885  
Braune D H 1883  
Lage O V B 1891  
Porto R M 1877  
Tinoco L A F 1893

## Brazil

Torelly F D 1887  
\*Gregory J H 1893

## Central America

\*Clark W O 1874

## West Indies

Ballou H A 1895

\* Non Graduate.













**Massachusetts Agricultural College**

**THE EXTENSION SERVICE**

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**SENDING THE COLLEGE  
TO THE STATE**



**AMHERST, MASS.,**

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**No. 5**

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## Introductory Statement

Within the last few years the Massachusetts Agricultural College has undergone almost a complete reorganization. The present plan of organization may be classified into four divisions—College work, the teaching of four year students; The Experiment Station, research and investigational work; The Graduate School, offering courses of study leading to advanced degrees; and The Extension Service, which is the organized effort to make every department of the institution contribute what it can toward the building up of the industrial and especially the rural life of the Commonwealth.

This bulletin, entitled "Sending the College to the State", describes very briefly the helps that the citizens of Massachusetts may secure from the College. It is in no sense a report of the Extension Service. It is issued in response to a large number of calls which have been coming in asking for information on this subject.

Those desiring help on agricultural problems should write to the Director or to the person whose name is given at the end of the paragraph describing each activity.

WILLIAM D. HURD,

Director of The Extension Service.

Amherst, Massachusetts, September 1, 1913.

## SHORT COURSES GIVEN AT THE COLLEGE

The short courses of the Massachusetts Agricultural College are offered to meet the needs of those, both old and young, who desire to study principles and modern methods of agriculture but who, for various reasons, are unable to come to the College for any great length of time. In these courses, the latest investigations in agricultural science are brought before the student and their practical application is clearly pointed out. The instruction, for the most part, is given by the heads of departments of the College. To supplement this teaching a large corps of non-resident lecturers and men who have made marked successes in their chosen lines of work are engaged each year.

### (A) WINTER SCHOOLS

#### 1. The Ten Weeks Courses

These courses comprise instruction in soil fertility, field crops, breeding and feeding of animals, dairying, bacteriology, animal diseases and sanitation, poultry breeding and management, fruit growing and market gardening, landscape gardening, floriculture, forestry, botany, entomology, construction of farm buildings, farm accounting, farm mechanics, sanitary science, beekeeping, the organization and development of rural life and rural improvement. Other courses will be added from time to time as the need arises.

The courses open about January 1 every year. A bulletin fully describing them is issued in October. A registration fee of five dollars is charged. Board and room may be had at reasonable rates.

For bulletin giving dates and other information, write WILLIAM D. HURD, Director, Amherst, Mass.

#### 2. The Apple Packing School

The instruction in this school is given by the Department of Pomology, under the direction of Prof. F. C. Sears, assisted by experts from this and other states. It is a practical course, one or two weeks in length, in which the actual work of grading and packing fruit is taken up. Persons taking the course will become familiar enough with the various packs to enable them to do commercial packing. In connection with the packing work, lectures are given on the leading phases of commercial orcharding such as planting, varieties, spraying, pruning, harvesting, marketing, and so forth.

A fee of five dollars for one week or ten dollars for two weeks, to help cover cost of fruit and packing material used, is charged.

The course is given about the third week in January each year.

For descriptive circular giving program, dates, and so forth, write WILLIAM D. HURD, Director, Amherst, Mass.

#### 3. Farmers Week

Farmers Week is given for the benefit of those who cannot come to the College for more than a few days. It is very largely attended and has come to be "the big event" in agricultural circles in the state each year.

The work is divided into several sections, namely:—(1) General Agriculture and Farm Management, (2) Dairying, Animal Husbandry and Poultry, (3) Horticulture, including fruit growing, market gardening, floriculture and forestry, (4) Women's Section, home economics, household management, and so forth.

These sections take up the time from early morning until late afternoon. Prominent men are engaged for the evening lectures.

Fruit, corn, dairy, poultry shows, and other exhibits have come to be among the leading features of Farmers Week. No fee is charged. Farmers' Week is held about the middle of March each year. A complete program is issued about Feb. 1. For this and other information write WILLIAM D. HURD, Amherst, Mass.

#### 4. **The Beekeepers Course and Convention**

The short course for beekeepers is under the immediate direction of Dr. Burton N. Gates. Instruction is given by Dr. Gates, other members of the faculty, and well-known apiarists, in the manipulation of bees, rearing of queens, production of comb and extracted honey, diseases of bees and their treatment, beekeepers' supplies and equipment, relation of bees to pollination of plants, structure and life history of bees, crops for honey bees, and so forth. Excursions are taken to large apiaries for study and observation.

The course is closed by an annual convention of beekeepers at which time extensive exhibits are arranged and lectures and demonstrations are given by the leading apiarists in this country.

The course usually opens the last of May each year and continues for two weeks. A registration fee of two dollars is charged to cover cost of material used. There are no other fees. Board and room may be had at low rates.

For program of the course and convention, dates, and so forth, write WILLIAM D. HURD, Director, Amherst Mass.

### (B) **THE SUMMER SCHOOL**

#### 1. **The Summer School of Agriculture and Country Life**

This summer school is designed for teachers, superintendents, school committeemen, farm owners, clergymen, librarians, social workers and those who have a general interest in agriculture and country life. Instruction is given in soils, field crops, domestic animals, dairying, poultry breeding and management, fruit growing, gardening, trees and shrubs, flower growing, forestry, landscape gardening, chemistry, plant life and experiments, botany, bird life, insect life, and entomology, beekeeping, handicrafts and practical arts, home economics, agricultural education, hygiene, organized play and recreation, school gardens, agricultural economics, rural sociology, community organization and development, rural literature, and so forth. New courses are added each year.

Round table discussions and educational trips are arranged by the instructors as their courses require.

A School for Rural Social Workers is especially arranged for clergymen and others. This comes during the last two weeks of the regular Summer School.

Evening lectures, excursions to points of historic interest and scenic beauty, and social evenings are arranged by those in charge.

The Summer School usually opens the first Tuesday of July each year. A registration fee of five dollars is charged. Board and room are furnished at low rates.

Amherst is located in one of the most noted historical and educational centres in this country. The work of the Summer School is unique and has become widely known as the "Amherst Movement". Anyone interested in problems pertaining to rural life should not fail to attend.

A bulletin giving full information on courses of study, expenses and so forth is published in March each year. For this, write WILLIAM D. HURD, Director, Amherst, Mass.

## 2. **The Conference of Community Leaders**

This conference is held as a closing feature of the Summer School each year. In it, the larger problems of New England community development are freely discussed. The following organizations cooperate with the College in providing the programs;—The Massachusetts Federation of Churches, the State Board of Education, The Free Public Library Commission, The Massachusetts Civic League, the State Board of Health, the County Work of the Y. M. C. A., the New England Home Economics Association, and the Bureau of Statistics.

Section meetings of these groups are held each forenoon, a general round table discussion is held each afternoon, and lectures are delivered each evening by persons prominent in social and educational work. Many small group conferences are also arranged.

Extensive exhibits showing in a graphic way what organizations and communities are doing along welfare lines are arranged at the time of the Conference.

The Conference usually lasts four days, coming the last of July and first of August. A full program is published about June 1. There are no registration or other fees.

For the program and detailed information, address WILLIAM D. HURD, Director, Amherst, Mass.

## 3. **The Boys Camp**

The Boys Camp is arranged in order that boys from rural districts and small towns may receive some instruction in agriculture, clean wholesome sports, and that they may have impressed upon them their responsibilities as coming members of society. Teachers, clergymen, Y. M. C. A. workers are especially urged to send boys who will be benefited by the instruction given at this Camp.

The Camp is under the strictest military discipline. Boys who do not care to conform to this are not expected to come. Not more than forty-two boys,—reservation being made for three from each county,—will be taken at one time. A succession of these camps, each lasting one week, may be arranged during July. The cost to each boy has, in the past, been seven dollars for the week. This fee helps defray the cost of maintaining the camp, meals, instruction, lectures, and so forth.

The daily program consists of Camp duty, flag raising, and so forth; agricultural lessons, talks on hygiene, good citizenship and so forth; play and recreation, instruction in handicrafts, photography, evening camp fires, and lectures by men prominent in boys' work.

For detailed program, registration blanks and other information, write WILLIAM D. HURD, Director, Amherst, Mass.

## 4. **The Poultry Convention**

For several years a short poultry course, two weeks in length, was held at the College. As a substitute for this, ten weeks' instruction is now given in this subject during the winter school and a poultry convention is held. To accommodate poultrymen, the convention is now held in July and is under the immediate direction of Professor J. C. Graham.

Three or four days of practical lectures and demonstrations on such subjects as breeds and breeding, incubation and brooding, feeding, care and management, poultry diseases, poultry house construction, caponizing, and so forth, are given by poultry experts who come from all sections of the country.

This convention is very largely attended. No registration or other fees are charged. For dates, detailed program or other information, write WILLIAM D. HURD, Director, Amherst, Mass.

### (C) MISCELLANEOUS SHORT COURSES

For some time there has been a call from several groups in the state doing agricultural work or dealing in agricultural products and materials, for help from the College. In order to be of assistance to these, short courses have been or are being arranged.

#### 1. The School for Tree Wardens

This school is held in response to a call from tree wardens and city foresters for instruction in the planting, care and preservation of trees. The State Forester and the Massachusetts Forestry Association cooperate with the College in giving the work.

Instruction is given in tree planting, forestry practices, diseases of trees, insects affecting trees, spraying, pruning, tree surgery, sprayers and apparatus, shade tree surveys, civic improvement, duties of tree wardens, laws and regulations, and so forth.

The course is held at the College about the fourth week in March and lasts from three to five days. An Extension School in these subjects will probably also be arranged at some convenient point in the eastern part of the state.

No resistration or other fees are charged. The cost of board and room is low. For dates, detailed programs and other information, write WILLIAM D. HURD, Director, Amherst, Mass.

#### 2. Short Courses for Other Groups

Plans are now under way to provide short courses at Amherst, lasting four or five days for fertilizer agents, feed agents and dealers, milk inspectors, seed dealers and any other groups that may desire such instruction. Plans, dates, programs and so forth can be had by writing WILLIAM D. HURD, Director, Amherst, Mass.

#### 3. Special Days for Foreigners

Each year there are provided at the College special days for foreigners, especially the Polish farmers who have come into the Connecticut Valley in large numbers.

Instruction is given in the crops and animals in which these people are most interested, soil management, cooperation, the need of their becoming good American citizens, Polish history, and so forth. The work is made more effective by the help of an interpreter.

Polish Farmers' Day is held during the last week in March.

Similar work will gladly be arranged at the College or in different sections of the state for Italians, Hebrews, Portugese or other nationalities which are settling in colonies.

For dates of those now being held and to make the necessary arrangements for new work, write WILLIAM D. HURD, Director, Amherst, Mass.

#### 4. Meetings of Organizations at the College

For years it has been customary for the various state organizations of fruit growers, poultrymen, breeders' associations, farmers' clubs, granges, boards of trade and others to meet for conventions, picnics, and so forth at the College. These meetings have always been welcomed by the College authorities and organizations are cordially invited to hold future meetings at the College. The Extension Service will be glad to provide facilities for seeing College grounds, help arrange programs and other forms of entertainment. Plans should be made some time in advance in order that convenient dates may be selected and conflicts in meetings avoided. To make such arrangements, write WILLIAM D. HURD, Director, Amherst, Mass.

### Itinerant Instruction Arranged at the College But Given Throughout the State

#### 1. Correspondence Courses

The Correspondence Courses in Agriculture are offered to people who cannot attend the short courses at the College. Instruction by correspondence is now offered in soils and soil improvement, manures and fertilizers, field crops, farm dairying, fruit growing, market gardening, animal feeding, floriculture, farm accounting, entomology, pedagogy of agriculture, beekeeping, forestry, shade tree management, agriculture in elementary schools, community cooperation in elementary education, poultry husbandry. Home Economics and others will be offered in the near future.

The lessons have been especially prepared in most cases by the heads of departments at the College.

A fee of one dollar is charged for each course. Registration is limited to residents of Massachusetts.

It is suggested that granges, men's clubs, Y. M. C. A's, women's clubs and other organizations form classes and have these conducted by a local leader. When this is done, the supervisor of the Correspondence Courses will meet with the class from time to time to assist in conducting the work.

For circular describing these courses and for other information, write ERWIN H. FORBUSH, Supervisor of Correspondence Courses, Amherst, Mass.

#### 2. The Lectures and Demonstrations

The members of the faculty of the College are glad to give lectures and demonstrations before granges, men's clubs, women's clubs, Y. M. C. A's, farmers' clubs, boards of trade and other organizations. A list of more than thirty lecturers and two hundred subjects on various phases of agriculture, country life, economics, sociology, education, civic betterment, and various scientific subjects has been prepared. Full courses of lectures or single lectures may be arranged.

Organizations arranging the lectures are asked to pay traveling expenses of the lecturer provided no admission to the lecture is charged. If admission is charged, then the lecturer is entitled to a fee in addition to traveling expenses.

The College has also arranged a "Lecture without a Lecturer" scheme. A set of slides, a stereopticon and a reading lecture are sent out to reliable parties. The following lectures are ready for 1914:—Clean Milk Production, Apple Growing, Types and Breeds of Animals, Culture of Corn, Potato



Growing. Home and School Ground Decoration, The Massachusetts Agricultural College, its Organization and Work. Other subjects will be announced later. A rental fee of one dollar and express charges both ways are charged for one of these lectures.

No doubt the most satisfactory way of impressing new and up-to-date methods upon people's minds is by *Practical Demonstrations*. Whenever possible, the following demonstrations will be given:—Production and Handling of Milk, Babcock Milk Testing, Scoring and Judging Live Stock, Scoring and Judging Poultry, Spraying and Pruning Trees, Packing Fruit, Grafting, Corn Judging and demonstrations in Beekeeping. Others may be arranged on request.

To secure single lectures or for assistance in arranging courses of lectures and so forth, write ERWIN H. FORBUSH, Supervisor of Correspondence and Lecture Courses, Amherst, Mass.

### 3. **Extension Schools**

Probably the most valuable work done away from the College is in the "Extension Schools." The college sends a corps of instructors to a town for a five day school of instruction. At present, the following courses are offered:—soil fertility, animal husbandry and dairying, fruit growing, poultry and home economics.

It is also possible to arrange special Extension Schools along one line of work, such as fruit growing or any other subject in which the College has facilities for giving the work.

Communities desiring an Extension School make a written request for the same, agreeing to defray all local expenses such as the rent, heating and lighting of a suitable hall, and the board of the instructors during the school.

For circulars describing these schools, and to make the necessary arrangements, write EARNEST D. WAID, Assistant Director, Amherst, Mass.

### 4. **Educational Exhibits at Fairs and Other Shows**

The College cooperates with the managers of fairs, industrial exhibitions, corn shows, poultry shows, fruit shows and other exhibitions by making educational exhibits.

For outside work, a large tent has been provided. In this about thirty cabinets containing educational material are arranged in an attractive way. Accompanying the exhibit is a corps of lecturers and demonstrators who give practical instruction daily.

For inside work a space at least 40x60 feet is required for this exhibit.

Smaller exhibits along special lines are sent to corn, fruit and poultry shows, child welfare exhibits, milk shows and so forth.

The managers of fairs and exhibits are asked to help defray the expenses of putting on these exhibits.

For dates, terms, contract blanks, and to make the necessary arrangements, write EARNEST D. WAID, Assistant Director, Amherst, Mass.

### 5. **Educational Trains**

The College, through the Extension Service, is glad to cooperate with railroad and trolley lines in the operation of educational trains and cars. The railroad usually furnishes the means of transportation and looks after the operation of the train or cars. The College furnishes the exhibit and provides the lectures and demonstrations. To arrange these trains, write WILLIAM D. HURD, Director, Amherst, Mass.

## **EXTENSION WORK CONDUCTED IN DIFFERENT PARTS OF THE STATE**

### **1. Extension Work in Fruit Growing**

This work is carried on in connection with and under the direction of the Department of Pomology. It consists chiefly in lectures and demonstrations on laying out and planting orchards, pruning, spraying, thinning, grading, packing and marketing fruits.

Demonstration orchards, new and renovation plots, are being established all over the state cooperatively between the College and the owners of land.

Extension Schools of fruit growing and fruit grading and packing will be arranged on request.

Advice is given as to selection of land for orchards, their care and management, and visits to farms for this advisory work are made so far as possible.

Correspondence on orcharding subjects is invited.

Address inquiries on these subjects to RALPH W. REES, Extension Instructor in Pomology, Amherst, Mass.

### **2. Extension Work in Dairying and Animal Husbandry**

The work in these subjects is carried on in connection with the departments of Dairying and Animal Husbandry at the College. At the present time, we are prepared to furnish assistance and advice in organizing Dairy Improvement Associations and Breeders' Associations, to give lectures and demonstrations on subjects pertaining to milk production, handling and marketing butter, and cheese making; instruction in barn planing, Babcock testing, selecting and judging animals, breeding and feeding, and helps on swine and sheep raising. Milk and dairy herd record blanks will be furnished free. Stock judging contests for boys are arranged at the leading fairs. City milk inspectors may receive instruction for their work in feeding, scoring stables, and so forth. Communities desiring to have campaigns conducted which seek to educate producers, dealers, consumers and the general public as to the production of clean safe milk may make arrangements for these. Exhibits are available for milk shows, child welfare exhibits and other exhibitions.

Those desiring helps on the subjects of milk and dairying, or who wish to arrange for any of the work mentioned above should write GEORGE F. STORY, Extension Instructor in Dairying and Animal Husbandry, Amherst, Mass.

### **3. Extension Work in Poultry Husbandry**

The Poultry Department of the College is prepared to help the poultrymen of the state in several ways.

Conferences may be arranged both at the College and at the plant of the owner on questions of general poultry management, diseases, mating, laying out and planning the buildings and other projects.

Cooperative work with state institutions, country schools of agriculture, agricultural departments in high schools, manual training departments in public and normal schools and with individuals will be arranged on request. Exhibits of poultry appliances and educational equipment are also made.

Poultry clubs with boys and girls, instruction in poultry raising by correspondence, poultry surveys, lectures and demonstrations and poultry judging at Extension Schools, poultry shows, fairs, granges, men's clubs, boards of trade and other organizations will be arranged.

For information and advice on poultry matters, or to arrange for any of the things mentioned above, write JOHN C. GRAHAM, Professor of Poultry Husbandry, Amherst, Mass.

#### 4. **Extension Work in Farm Management, Field Studies and Demonstrations**

This work is carried on cooperatively between the College and the office of Farm Management of the United States Department of Agriculture at Washington. The work consists in studying farm conditions and farm management problems; in instruction in keeping farm accounts, for which the necessary blanks are furnished at cost; in demonstration work and growing field crops; in the use of fertilizers and lime; in giving advice as to farm equipment, buildings, and so forth; in aiding farmers to cooperate; in making farm surveys; giving lectures and helps through personal visits to farms.

Cooperative demonstration work in hay growing, use of fertilizers, good seeds, crop rotation and so forth may be arranged on request.

For information, record blanks, plans for cooperative work, and to make arrangements for personal visits to farms, write HERBERT J. BAKER, Extension Instructor in Farm Management, Amherst, Mass.

#### 5. **Extension Work in Civic Betterment**

This work is carried on in connection with and under the direction of the Department of Landscape Gardening at the College. Assistance can be given in all kinds of rural and village improvement enterprises such as the planting and care of shade and street trees, the location, planning and equipment of playgrounds, the planning of school grounds, cemeteries and picnic grounds, the beautifying of water fronts, the rearrangement of and development of town commons, reservations of historic interest and similar matters. Those in charge of this work can give their best services through cooperation with local granges, men's and women's clubs, village improvement societies and similar organizations.

Those desiring help and information on these subjects should write P. H. ELLWOOD, Extension Instructor in Civic Improvement, Amherst, Mass.

#### 6. **Extension Work in Agricultural Education**

This work is carried on in connection with the Department of Agricultural Education of the College and in cooperation with the United States Department of Agriculture, Washington. It consists chiefly in the organized Boys' and Girls' Club work carried on in cooperation with the schools of the state. There are three types of clubs already organized, namely:—

**Horticultural Clubs.** To encourage the study of best methods of planting and caring for a few of the most valuable horticultural and agricultural crops, carefully selected potatoes, flint corn, sweet corn, beans, and tomato seeds are sent to be planted in the home garden, and with each variety is sent a carefully prepared primer of instruction. A primer on the common varieties of flowers will be sent this year to those members who are interested in the raising of flowers. The older home garden members are encouraged to plant one, two or four square rods of vegetables keeping an exact account of products furnished the home and sold.

The larger units of work are the twentieth-acre market gardens products for boys and girls under fourteen years of age; and the tenth-acre market gardens for boys and girls between fourteen and eighteen years of age.

The canning club activities are carried on in connection with the twentieth and tenth-acre plats.

**Agricultural Clubs.** The Agricultural units are the eighth-acre of potatoes and the one-half acre of corn as the minimum areas for boys and girls under fourteen years of age; the quarter acre of potatoes, acre of corn, and the half or acre of hay are the minimum areas for boys and girls between fourteen and eighteen years of age. Instruction is furnished the members of the agricultural clubs and premiums are offered.

**Poultry Clubs.** Poultry clubs are to be organized this fall to study the best methods of housing and feeding hens for egg production. Each member may start with six, twelve, or twenty-five hens. Suitable premiums will be awarded for best results.

All the agricultural fairs have boys' and girls' departments with good lists of premiums. And there will also be held this year on December 2 and 3 a State Exhibit at Springfield to which boys and girls may send prize material.

The educational department of the Extension Service will cooperate with local school departments or other organizations in organizing and promoting any of these lines of work.

For information blanks, literature or advice in these subjects, write O. A. MORTON, Extension Professor of Agricultural Education, Amherst, Mass.

#### 7. **Extension Work in Home Economics**

The Home Economics Department stands ready to assist in solving problems relative to the household in the same manner as other departments of the Extension Service do to the problems of the farm. This coming year there are specific ways in which it hopes to cooperate with women. (1) During Farmers Week in March, when it is expected that women from all parts of the state will meet for the five days. At the time there will be lectures, demonstrations and conferences touching upon household topics in a most practical manner. (2) Home economics work will be carried on in the Summer School of 1914 similarly to that of 1913, and a program of women's work will be made a part of the 1914 Conference. (3) The Extension Schools will have their women's department where talks will be given in the morning and demonstrations in the afternoon. (4) Requests for single lectures or demonstrations will be gladly received and arrangements made for such exercises. (5) Calls for assistance in farming girls' clubs and home economics clubs for women; to discuss the rural school lunch problem; to cooperate with any existing organization in the matter of interesting young people in the proper care of the home; all such appeals will be gladly welcomed.

For information or to make arrangements for any of these helps, write MISS LAURA COMSTOCK, Extension Professor of Home Economics, Amherst, Mass.

#### 8. **Extension Work in Community Organization**

Several communities in the state have appealed to the College for help and advice as to how all the organizations in the community can be brought to a higher state of efficiency and as to what steps the communities themselves might take toward community development and advancement. The College is now prepared to make scientific studies of communities, which lead up, by means of surveys, to the definite organization of committees to study the agricultural, educational, religious, transportation, recreation and civic needs of the communities. Usually several state organizations

and some national organizations are brought in to help in working these plans out.

Conferences on community affairs will be organized and held when requested.

The College acts simply in an advisory capacity, the communities themselves doing the actual organizing work.

For information, to arrange conferences, and for advice on these matters, write E. L. MORGAN, Community Field Agent, The Extension Service, Amherst, Mass.

### 9. **Auto Demonstration Outfit**

In order to reach communities all over the state more effectively, an auto demonstration outfit has been provided. This auto truck has been equipped with spraying apparatus, pruning tools, Babcock milk tester and other dairy apparatus, dairy record blanks, farm account blanks, a radioptican with sets of pictures for illustrative use, books, bulletins, pamphlets and other equipment.

This outfit, in charge of a competent instructor or demonstrator, will visit towns all over the state on request, giving lectures and demonstrations along lines of most interest to that community.

It is suggested that small groups of farmers meet together for general conferences with the instructor in charge, after which visits to individual farms will be made.

The instructor will stay a week or more in each town if necessary.

This is a practical, direct way of getting help from the College on your own farm.

Arrangements should be made for the visit of the outfit to your town several weeks in advance in order that travel and time may be economized. To make the necessary arrangements, write A. F. MCDUGALL, Instructor in charge of Auto Demonstration Outfit, Amherst, Mass.

### 10. **Library Extension Work.**

The Library Extension Work consists principally of sending out to the public libraries of the State collections of books and bulletins on agriculture and related subjects. General collections of 10 to 30 books and bulletins are loaned to libraries, also special collections of smaller size on specified subjects such as fruit growing, dairying, poultry, bees, home economics, etc. These books may be kept for a period of from four to eight weeks, according to the demand for them. The only expense is cost of transportation of the books both ways.

The College Library also, as a part of the Extension Service work, supplies information about books on agriculture and related subjects by answering letters concerning the selection and purchase of books, working up typewritten lists of references on certain subjects, and printing lists of books on special subjects.

For information, advice or to secure these traveling libraries, write CHARLES R. GREEN, Librarian, Amherst, Mass.

### 11. **Agricultural Surveys**

In order to acquire definite information about existing conditions in rural communities, which may be later used as a basis for further extension work, agricultural surveys are being made as rapidly as possible. The different organizations and officials in the community such as the town officers, superintendent of schools and teachers, clergymen, librarians and

others usually cooperate in making the survey. The survey covers every side of the community life including soil survey, farm management practices, and the educational, social, religious and recreational life. Carefully prepared blanks have been provided on which the inventory is made.

For information regarding these surveys and to make arrangements for them, write ALEXANDER E. CANCE, Supervisor of Agricultural Surveys, Amherst, Mass.

#### 12. Rural Business Organization

The College realizes that the next important step in our rural life is to establish agriculture on a better business basis.

Assistance can be given in the organization of cooperative buying and selling associations, rural credit, the finding of a better market for agricultural produce, and other lines of rural credit.

Those wishing help along these lines should write ALEXANDER E. CANCE, Amherst, Mass.

#### 13. M. A. C. Agricultural Improvement Association

This is an organization of ex-students of the College who are farming in the state and who have banded themselves together for the purpose, according to the Constitution of the Association, of "promoting the agricultural development of the state by carrying on experiments and demonstrations—for the betterment of rural pursuits,—by using and encouraging the use of better seeds and animals, and by the organization of cooperative societies,—by the dissemination of literature bearing on recent agricultural investigations"—and so forth.

High grade strains of corn and potatoes are being produced by the members for the Massachusetts seed trade. The growing of alfalfa is now being taken up. Work with animals will soon begin.

For information as to seeds, membership and so forth, write EARNEST D. WAID, Secretary, Amherst, Mass.

#### 14. Demonstration Farms and Plots

The College believes that one of the most effective ways of teaching modern farm practice is to establish demonstrations (not experiments) in all sections of the state. These show a man on his own land and under his own conditions what the result of proper farm practices will be.

The Faunce Demonstration Farm at Sandwich, Mass., which has been under the advisory direction of the College for more than three years, has proven to the Cape Cod region that small fruits, poultry and vegetables can be successfully grown there. The superintendent of this farm has also been active in promoting work leading to the development of that section of the state. The management of these demonstration farms is usually carried on by a committee or board of trustees representing the farm and a committee appointed from the College, acting jointly.

Demonstration plots showing proper fertilization of grass land and other crops, results of rotations, proper care of orchards, dairy management, land drainage, seed selection and many other lines are being arranged on request.

Those in charge of projects which they would like to turn into demonstration work for the benefit of their communities or who wish to make arrangements for demonstration plots should write WILLIAM D. HURD, Director, Amherst, Mass.

#### 15. County or District Agricultural Advisers

There is being worked out in Massachusetts on a state wide basis, in keeping with plans which have been adopted in other states, a plan for placing ultimately in every county of the state, or in some cases in a group of towns, a man trained in agriculture to act as agricultural adviser for that county or district. The plan is being carried out cooperatively between the Office of Farm Management at Washington, the College and communities themselves. Each helps pay the expense of maintaining the persons or person doing the work.

At the present time, two counties are doing this work and others are ready to organize as soon as state and government funds are available.

**Hampden County.**—This work is organized under and directed by the "Hampden County Improvement League." Three men have been engaged for work in that county alone. The headquarters of the league are at Springfield.

Mr. C. J. Grant is Agricultural Adviser and helps the farmers of the county in purchasing fertilizers, testing seeds, buying lime, establishing demonstration plots, organizing dairy improvement associations, advising as to the crops adapted to certain soils, the keeping of farm accounts, drainage, and many other questions of general farm management.

Mr. Albert R. Jenks is Horticultural Adviser and assists the farmers of the county by establishing demonstration and renovation orchards, by giving demonstrations in pruning, spraying and packing fruit, by establishing fruit growers associations for the buying of trees, spraying material, fruit packages and so forth, and for the cooperative marketing of the products, and in many other ways.

Mr. John A. Scheuerle is General Secretary and executive in charge of the work of Hampden County. Besides directing the work, he is helping the farmers of that county to establish better business cooperation, rural credit, better roads; is encouraging rural sanitation and home economics in small communities; is organizing boys' and girls' clubs, civic improvement associations, and is endeavoring to help towns to establish better systems of town administration, schools, churches and social organizations.

For helps from the League, residents of Hampden County should write Mr. JOHN A. SCHEUERLE, Secretary, Massasoit Building, Springfield.

**Barnstable County.**—Co-operating with the Faunce Demonstration Farm at Sandwich, the superintendent of this farm acts as agricultural adviser for Barnstable County.

Residents of this county are free to call on him for advice, without cost, on the adaptability of their land for certain crops, renovating old orchards and planting new ones, use of fertilizers and lime, proper methods of tillage, growing of windbreaks, combating insects and diseases, establishing demonstration plots, pruning and spraying demonstrations, problems of poultry farm management, keeping of farm accounts, lectures, questions of community organization and other things. Residents of Barnstable County should write or consult L. B. BOSTON, Superintendent of the Faunce Demonstration Farm, Sandwich, Mass.

Counties or communities in the state that wish to consider organizing themselves to secure district or county agricultural advisers, and who wish the co-operation of the state and the United States Department of Agriculture in organizing and directing the work, should write or consult WILLIAM D. HURD, Director, and State Representative of the Office of Farm Management, U. S. D. A., Amherst, Mass.

## 16. Student Extension Work

For several years the regular student body of the College has done a good deal of extension work, especially in towns not far distant from Amherst.

The Social Service Secretary of the College, co-operating with the Extension Service, expects to develop this work to a greater degree than ever before.

Students of the College, so far as their time will permit, will give lectures and demonstrations on agricultural subjects, teach English and civics to foreigners, coach and supervise athletic contests with boys and girls, help organize and conduct debating societies and bible classes and give talks on true sportsmanship and clean living, give musical entertainments and act as judges and helpers at fairs and other exhibits.

To make arrangements for this work write Mr. ELGIN SHERK, Social Service Secretary, Amherst, Mass.

## 17. Advisory Work with Institutions and Individuals

During the last few years the College has been co-operating to a considerable degree with the other state institutions, of which there are about thirty, in the handling of their extensive agricultural projects. The College feels that this co-operation and interchange of ideas is highly desirable, and

will be glad to make arrangements so that the best talent at the College may be secured to act in an advisory capacity at any institution within the state.

Large numbers of calls are received at the College for help and advice as to the selection of farms, advice as to growing crops, management of dairies, soil treatment, equipment and other matters. The College is glad to render what assistance it can, but at present the force of instructors available for this work is not sufficient to meet all the demands. It is hoped a competent man will be available in the near future to do this work.

Institutions or individuals desiring this kind of help should write EARNEST D. WAID, Assistant Director, Amherst, Mass.

### 18. **Miscellaneous Helps from the Collège**

Below is given a list of subjects which may be suggestive of other lines of work by means of which the College may help you.

Agricultural education.	Grass, meadows, hay making.
Agricultural literature.	Identification of plants.
Agricultural organization.	Identification of insects.
Babcock testing.	Insects and insecticides.
Bacteriology.	Landscape gardening.
Books on agriculture.	Live stock.
Breeders' organizations.	Manures.
Chemistry of foods, fertilizers, etc.	Market gardening.
Civic betterment.	Marketing farm products.
Clearing land.	Milk problems.
Community organization.	Nursery work.
Co-operation.	Orchard management.
Crops under glass.	Plant breeding.
Dairying.	Plant diseases.
Dairy records.	Poultry.
Dairy improvement associations.	Purity of seeds.
Diseases of live stock.	Rotation of crops.
Drainage.	Rural credit.
Drinking water.	Rural economics.
Farm bookkeeping.	Rural sanitation.
Farm buildings.	Rural social conditions.
Farmhouses, sanitation, etc.	Schools of agriculture.
Farm crops.	Selection of farms.
Farm machinery.	Small fruits.
Farm management.	Soil composition.
Farm managers.	Special crops.
Feeds and feeding.	Spraying.
Fertilizers, composition and use.	Statistics of agriculture.
Field crops.	Stock breeding.
Floriculture.	Storage of fruits and vegetables.
Forestry.	Tillage.
Fruit culture.	Trees.
Gardeners and florists.	Tree diseases.
Greenhouse construction and management.	Tree surgery.
Greenhouse crops.	Veterinary science.

Inquiries on any of the above subjects directed to WILLIAM D. HURD, Director, Amherst, Mass., will be referred to the proper departments and will receive the best expert attention the College is able to give.

### 19. **Publications of The Extension Service**

The Extension Service has published the following circulars, bulletins and reports. A permanent mailing list of those desiring the publications and requesting that their names be placed on the list, is maintained. The publications are sent free.

**Short Courses Bulletins and Circulars** (issued annually):—

- Ten Weeks Course.
- Farmers Week.
- Apple Packing School.
- School for Tree Wardens.



Beekeeping Course and Convention.  
 Summer School of Agriculture and Country Life.  
 School for Rural Social Workers.  
 Poultry Convention Program.  
 Conference of Rural Community Leaders.

**Correspondence Courses Circular** and list of books recommended for reading in connection with the courses (issued annually).

**Lecture Course Circular.** giving a list of lecturers and subjects on which they speak (revised each year).

**Reports :—**

Report of The Extension Service for Two Years, 1909—1911.  
 Report of the Massachusetts Agricultural College Improvement Association, 1912.

**Blanks :—**

Three-day Milk Record Blanks and Daily Milk Record Blanks.  
 Farm Accounts Blanks—Inventory and Journal sheets. (Fifty cents is charged for 50 of the sheets and one pair of loose leaf covers.)  
 Demonstration Orchard information, sheet and contracts.  
 Individual Cow Records.  
 Herd Summary Sheets.

**Sample Constitutions** for Dairy Improvement Associations and Breeders' Associations.

**Dairy Improvement Bulletin.**

"**Facts for Farmers.**" a leaflet issued each month, containing timely information on fruit growing, dairying, animal husbandry, beekeeping, soils and other agricultural subjects.

**Library Leaflets :—**

No. 1. Selected List of References for Fruit Growers.  
 No. 2. Useful Books for the Dairyman.  
 No. 3. Good Books for Poultrymen.  
 No. 4. Books on Vegetable Gardening.

**Primers :—**

Boys' and Girls' Corn Club Primer.  
 Boys' and Girls' Sweet Corn and Bean Club Primer.  
 Boys' and Girls' Tomato Club Primer.  
 Boys' and Girls' Potato Club Primer.

Those desiring these publications should write WILLIAM D. Hurd, Director, Amherst, Mass.

**20. Co-operation with Other Organizations**

The agricultural industry in Massachusetts is an important one and is worthy of the best efforts of all existing organizations in its development. With a large number of organizations in the field, the problem becomes a complex one. The College believes that the greatest progress can be made by a co-operative, federated effort on the part of all.

The College desires to co-operate with and welcomes co-operation from such state organizations as the State Board of Agriculture, the State Grange, The State Board of Education, The Massachusetts Civic League, The Free Public Library Commission, The State Board of Health, The State Highway Commission, The Massachusetts Federation of Churches, The County Work of the Y. M. C. A., and other state wide organizations interested in questions of rural development.

The College is glad to help local organizations, and welcomes suggestions from such organizations as town officers, local granges, farmers' clubs, woman's clubs, men's clubs, Y. M. C. A.'s, Y. W. C. A.'s, Boards of Trade, Village Improvement Societies, teachers, clergymen, librarians and others interested in agriculture and country life.

To arrange work which may be mutually helpful, write or consult WILLIAM D. Hurd, Director, Amherst, Mass.

## 21. Future Development of The Extension Service

While some progress has been made during the last four years in organizing the Extension Service, yet the College falls far short of doing what it might to build up the rural life of the state.

The calls now made on Extension men and heads of departments far exceed the ability of these men to meet them. More Extension instructors are needed for poultry work, fruit growing, dairying and animal husbandry, farm management, agronomy, boys' and girls' club work, rural engineering, home economics, agricultural survey work, rural business organization and many other lines. We believe it just as possible to develop sane, systematic and dignified instruction for the people of the state as it is for college students in college class rooms but, of course, it must be a different system, and requires men especially trained and temperamentally suited to the task. The further usefulness of the Massachusetts Agricultural College to the people of the Commonwealth depends entirely on appropriations granted for the development of the Extension Service.

Any suggestions for developing the work or making it more effective will be gladly received by WILLIAM D. HURD, Director, Amherst, Mass.

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## DIRECTORY OF WHERE TO GET INFORMATION FROM THE MASSACHUSETTS AGRICULTURAL COLLEGE.

### A. The College

All questions regarding admission to the College, either to the freshman class or to advanced standing should be addressed to Professor P. B. HASBROUCK, Registrar, Amherst, Mass.

Those desiring college catalogs, the President's annual report and other pamphlets giving full information relative to entrance requirements, course of study, expenses, opportunities for student labor, and so forth, should address President KENYON L. BUTTERFIELD, Amherst, Mass.

### B. The Experiment Station

The Experiment Station conducts investigations in as many lines of agricultural science and practice as its funds will permit. It has charge of the inspection of commercial fertilizers, commercial feeding stuffs, and milk testing apparatus. Branch stations in cranberry and asparagus culture are maintained in other sections of the state.

The Station considers the farmers' problems to be its problems, and desires to keep in touch with them.

Requests for bulletins reporting the results of experiments and inspections and for other information on the work of the Station should be addressed to MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION, Amherst, Mass.

### C. The Graduate School

Questions relating to courses offered leading to the degrees of Master of Science and Doctor of Philosophy, admission and work required, should be addressed to Dr. CHARLES E. MARSHALL, Director of the Graduate School, Amherst, Mass.

### D. The Extension Service

Inquiries of a general nature regarding the work of the Extension Service, the Short Courses, publications or requests for new lines of work should be addressed to WILLIAM D. HURD, Director of the Extension Service, Amherst, Mass.

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#### STATEMENT OF THE OWNERSHIP,

Management, circulation, etc., of the M. A. C. BULLETIN. Published six times a year at Amherst, Mass. Required by the act of August 24, 1912. Editor, Massachusetts Agricultural College, Amherst, Mass. Business manager, Massachusetts Agricultural College, Amherst, Mass.; Owner, Massachusetts Agricultural College, Amherst, Mass.

[Signed] RALPH J. WATTS,  
Secretary to the President, Mass. Agr. College.

Sworn to and subscribed before me, }  
this 28th day of March, 1913.

[SEAL] [Signed] FRED C. KENNEY, Notary Public.

(My commission expires Jan. 29, 1916.)





# Massachusetts Agricultural College

THE EXTENSION SERVICE

## Short Courses



Vol. V, No. VI

M. A. C. Bulletin

Oct. 1913

AMHERST, MASS.

1914



THE  
M. A. C. BULLETIN  
AMHERST, MASS.

Volume V

Number VI

OCTOBER 1913



Published Six Times a Year by the  
MASSACHUSETTS AGRICUL-  
TURAL COLLEGE. JANUARY,  
FEBRUARY, MARCH, MAY,  
SEPTEMBER, OCTOBER



ENTERED AS SECOND CLASS MATTER  
AT THE POST OFFICE, AMHERST, MASS.





## DATES OF SHORT COURSES 1914.

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Ten Weeks' Course . . . . .	Jan. 5 to Mar. 13
Apple Packing School . . . . .	Jan. 21 to 28
Farmers' Week . . . . .	Mar. 16 to 20
Tree Wardens' School . . . . .	Mar. 24 to 27
Polish Farmers' Day . . . . .	Mar. 26
Beekeepers' Course . . . . .	Date to be announced
Beekeepers' Convention . . . . .	Date to be announced
Summer School. . . . .	June 30 to July 28
Boys' Agricultural Camps, July. . . . .	Exact dates to be announced
Conference for Rural Leaders . . . . .	July 28 to 31
Poultry Convention . . . . .	July 22 to 24

## FACULTY.

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KENYON L. BUTTERFIELD	President and Head of Division of Rural Social Science.
WILLIAM D. HURD	Director of the Extension Service.
ALEXANDER E. CANCE	Associate Professor of Agricultural Economics.
W. D. CLARK	Professor of Forestry.
SAMUEL COONS	Instructor in Dairying.
HENRY T. FERNALD	Professor of Entomology.
JAMES A. FOORD	Professor of Farm Administration.
GEORGE S. GAGE	Assistant Professor of Animal Pathology.
BURTON S. GATES	Assistant Professor of Beekeeping.
JOHN C. GRAHAM	Professor of Poultry Husbandry.
CHARLES R. GREEN	Librarian.
WILLIAM R. HART	Professor of Agricultural Education.
SIDNEY B. HASKELL	Associate Professor of Agronomy.
WILLIAM P. B. LOCKWOOD	Professor of Dairying.
E. M. McDONALD	Instructor in Agronomy.
F. A. McLAUGHLIN	Assistant in Botany.
JOHN A. McLEAN	Associate Professor of Animal Husbandry.
JAMES B. PAIGE	Professor of Veterinary Science.
ELVIN L. QUAIFFE	Instructor in Animal Husbandry.
RALPH W. REES	Extension Instructor in Pomology.
FRED C. SEARS	Professor of Pomology.
ROBERT J. SPRAGUE	Professor of Economics.
E. J. CANNING	Temporary Instructor in Floriculture.
B. C. GEORGIA	Assistant Professor of Market Gardening.

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## NON-RESIDENT LECTURERS.

To supplement the work given by the regular faculty, a number of men who have made conspicuous successes in their chosen fields will be engaged for lectures and demonstrations.

# The Ten Weeks' Courses.

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## ANNOUNCEMENT.

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**T**HE short courses at the Massachusetts Agricultural College are offered to meet the needs of those, both young and old, who want to study principles and modern methods in agriculture and who for various reasons are unable to attend the four year courses. The work is planned to bring before the student the results of the latest investigations in agricultural science, and to point out their practical application.

Instruction will be given by the regular faculty of the college by means of lectures, recitations, laboratory, and practical work; from time to time they will be assisted by non-resident lecturers on special subjects. The work in the class-room will be supplemented by demonstration work in the laboratory, dairy room, greenhouse, and stables. The library of over 30,000 carefully selected volumes offers exceptional opportunities for special study in agriculture, horticulture, and related sciences.

Students will be required to elect courses to make not more than twenty-four nor less than twelve exercises each week. The arrangement of courses is such that students must follow certain lines of work. Those electing Dairy Industry, Floriculture, or Horticulture, must also take courses in allied subjects, as noted in the description of these courses. In general agriculture more latitude is allowed, but it is expected that students will show a definite purpose in the selection of work. All elections, as well as any deviation from the regular rule, must be approved by the Director.

## COURSES OF INSTRUCTION.

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### A. Agricultural Group.

#### 1. Soil Fertility.

*Professor Haskell*

The nature of soils, their chemical and physical properties. The improvement of "run-down" land. Tillage. Green manuring. Crop rotation. Drainage. Stable manures, their value, composition, preservation, and application. Commercial fertilizers, their nature and use. Fertilizers for different crops. The duplication of formulae. Limes and liming. Three lectures a week for ten weeks.

#### 2. Field Crops.

*Mr. McDonald*

The production of field crops for New England; species and varieties, agricultural characteristics, methods of culture, rotations, harvesting, and curing. The laboratory work will give the student practice in seed selection and testing for quality, purity, and germination, and in corn and potato judging. Three lectures each week for ten weeks. Course 1 (Soil Fertility) required. Laboratory registration limited to 40.

#### 3. Types and Breeds of Live Stock.

Outlines of the market classes and grades of beef cattle, horses, sheep, and swine, placing emphasis upon the characteristics of each class and its adaptations. The characteristics, the adaptations, and so far as is possible the historic development of each of the more important breeds of live stock are carefully studied, also their distribution in America. Special emphasis is laid upon dairy-cattle and horses in the judging work. Three lecture periods, and two two-hour judging periods each week.

#### 4. Live Stock Feeding.

A study of the physiology of nutrition, the composition of feed stuffs, and of rational economic feeding. The feeding of dairy cattle and the management for profitable milk production

receive first attention. Similarly, the feeding of horses, of beef cattle, of sheep and swine, is studied. Three lecture periods per week.

**5. Live Stock Management.**

*Mr. Quaipe*

The care of live stock: Fitting for show, dipping, dehorning, trimming of feet, harnessing, halter making, and rope splicing, care of animals at parturition, etc. This course aims to prepare a young man for most of the problems that are certain to meet him in herd care and management. One two-hour laboratory period per week. Laboratory fee of one dollar.

**6. Animal Breeding.**

*J. A. McLean*

A discussion of the commoner problems pertaining to the breeding of live stock, their explanation and solution; inbreeding; cross-breeding; grading. The work of the most successful men in history will be studied. Time will be given to the study of pedigrees of the different breeds of dairy cattle and other stock. One lecture period, and one two-hour laboratory period per week.

**7. Dairying.**

*Professor Lockwood, Mr. Coons and Assistants*

Milk and milk production, creaming methods. Babcock and acid tests. Market milk handling. Ripening cream and butter making. Dairy Arithmetic. Dairy buildings, lighting, ventilation, and sanitation.

5 one-hour and  $\left\{ \begin{array}{l} 2 \text{ two-hour periods} \\ 2 \text{ three-hour periods} \end{array} \right.$

**8. Dairy Bacteriology.**

*Doctor Marshall*

The characteristics and functions of bacteria and their relation to the different branches of the dairy industry. The scientific basis for cream ripening, sterilization, pasteurization, control of fermentation, and the production of the best quality of market milk. Two lectures each week.

**9. Animal Diseases and Stable Sanitation.**

*Doctor Paige*

Lectures upon some of the common diseases of live stock, giving special attention to methods of prevention, care, and san-

itation. The treatment of emergencies and accidents. How to keep animals healthy. Two lectures each week.

**10. Poultry Course.**

*Professor Graham*

The course will consist of lectures on poultry house construction, winter egg production, incubation and brooding, feeds and feeding, and marketing poultry and eggs. Besides the lectures, there will be one or two demonstration periods per week, depending upon the size of the class. Demonstrations or practical work will be given on killing, picking, and caponizing, sorting, and packing eggs for market, judging fowls for egg production, studying types, and studying construction of incubators and brooders. Our present equipment will enable us to demonstrate various methods in housing and feeding. Practical work in running incubators will be given to as many as our equipment will accommodate. Five exercises a week for ten weeks.

**B. Horticultural Group.**

**11. Fruit Growing.**

*Professor Sears*

The work in this course will deal with the practical side of the growing and marketing of fruits. Especial attention will be given to such questions as selection of site for the plantation, choice of varieties, grafting and budding, spraying, pruning, cultivation and cover crops, fertilizing the fruit plantation, packing, and marketing. Text books and lectures, supplemented with demonstrations; and whenever possible, actual work by the student. Five exercises each week for ten weeks.

Students electing Horticulture will also be required to take Course 1, and it is recommended that they take Courses 14 and 15.

**12. Market Gardening.**

*Mr. Georgia*

A general survey of the market gardening business, together with a study of the most important problems involved, such as location, soils, fertilizers, crops, systems of cropping, markets, and marketing. Three lectures each week for ten weeks.

### 13. Landscape Gardening.

*Professor Harrison*

The general principles of the art, the various styles of design, the literature of landscape gardening, and some notice of important American masterpieces. Elementary problems in surveying, drafting, and designing. Plants, methods of construction, and planting. Two two-hour exercises each week. Class limited to 15.

### 14. Floriculture.

*Mr. Canning*

This course is outlined with the idea of furnishing young men who have not the time to devote to a longer course, with the theoretical and practical considerations which are essentials for success in Floriculture. The course will cover, as thoroughly as time will permit, those aspects of the work of special interest to the grower. Some of the topics to be considered are greenhouse construction, greenhouse details, such as ventilators, gutters, benches, etc., greenhouse furnishings and equipment, heating, florists' crops and florists' trade.

All taking the course should bring a working suit. Saturdays there will be special trips to some of the most up-to-date floricultural establishments in the state.

In addition to the regular lecture work of the course, it is expected that lectures will be given by experts in growing special crops, such as roses, carnations, violets, and orchids. Five lectures each week, and field trips on Saturday.

Students electing this course will also be obliged to take Courses 1, 16, and 17.

### 15. Forestry.

*Professor Clark*

Lectures given to acquaint short course students with the importance of conserving the forests and forest products. The value of the forests to the state and nation. Special attention given to the handling of the farm wood lot. One lecture a week for ten weeks.

## G. Related Sciences.

### 16. Botany.

*Mr. McLaughlin*

A study of the structure, function, and diseases of greenhouse, garden, orchard, and field crops, together with methods

of prevention, including spraying and the application of fungicides. One period each week will be devoted to laboratory work. Two lectures each week.

**17. Entomology.**

*Professor Fernald*

A study of the insects causing most injury to farm, orchard, garden and greenhouse crops, and to domestic animals, with methods for their destruction or control. Closely correlated to the work in horticulture and agriculture. Three lectures each week.

**18. New England Rural Life.**

A course designed to acquaint Short Course students with the possibilities for the several lines of agriculture in New England. The work of the leading state organizations which are helping to build up New England country life will be presented by officers of each organization. This course is required of all Short Course students and takes the place of attendance at chapel and assembly, which was formerly required. Two lectures a week.

**19. Farm Accounts.**

*Professor Foord*

Practical work in keeping farm accounts and records. A simple system by which profits and losses of the farm may be traced to their original sources. One exercise a week, each exercise to equal two hours.

**20. Mechanics.**

*Professor Lockwood and Mr. Schroyer*

Care of boilers, engines, and dairy machinery, installing and lining shafts and pulleys; calculating speeds of pulleys, etc. Cement foundations and floors. Plans for farm and dairy buildings. One exercise of two hours each week.

**21. Rural Sanitary Science.**

*Doctor Marshall*

The following subjects will be considered: Significance of sanitary science, theories of disease, dirt and its dangers, drinking water and its protection, sewage, methods of disposal and purification, ventilation, foods, flies, and mosquitoes in relation to sanitation, disinfectants, etc. Two lectures a week.



**22. Beekeeping.**

*Doctor Gates and Mr. Byard*

This course deals with fundamental and practical apiculture, co-related with horticulture (field and greenhouse market gardening, cranberry culture, fruit raising). The following subjects will be included: The natural history and behavior of bees, races, their handling and manipulation, handling of queens, wintering, comb and extracted honey production, the care of crops, diseases and their treatment, a thorough study of appliances.

First hand experience in all phases of the subject is emphasized. The large College collection of implements affords particular opportunities for demonstrations. The course will probably be concluded by a convention at which prominent authorities will attend. (Three periods, two lectures, and one laboratory.)

**23. Rural Improvement.**

*Professor Waugh*

Civic art as applied to rural conditions. The improvement of roads, street trees, schoolhouses and grounds, public buildings, farm buildings, farm planning, etc. The organization and management of village and country improvement societies. Two lectures a week.

**24. Marketing Farm Products.**

*Doctor Cance*

A discussion of some of the practical problems confronting the farmer in the disposal of his produce and the purchase of agricultural supplies, and the best methods of meeting the problems, — the farmer's market, co-operative societies, direct sale, use of parcel post, the motor truck, etc. (One hour a week, one credit.)

# TEN WEEKS' SHORT COURSE — 1914.

	MORNING HOURS				AFTERNOON HOURS			
	1st Hr.	2d Hr.	3d Hr.	4th Hr.	1st Hr.	2d Hr.	3d Hr.	4th Hr.
MONDAY	Dairy, Fruit Gr.	Live Stock Feed. Ent.	Poultry Types & Breeds Floricult.	Soil Fert.	<i>But. Mak. 1 &amp; 2</i> <i>Mkt. Milk 3</i> <i>Types &amp; Breeds 2</i>	<i>But. Mak. 1 &amp; 2</i> <i>Mkt. Milk 3</i> <i>Types &amp; Breeds 2</i>	<i>But. Mak. 1 &amp; 2</i> <i>Live Stock Mgt.</i> <i>Mkt. Gard.</i>	4th Hr. <i>Line Stock Mgt.</i> <i>Bee Keep.</i>
TUESDAY	Dairy, Ru. San. Sc. Botany	Fld. Crops	Dairy Bact. Floricult. (Jan. 5-Feb. 2) <i>An. Breed. 1</i>	Poultry Floricult. (Feb. 2-Mar. 15) <i>An. Breed. 1</i>	<i>But. Mak. 1 &amp; 2</i> <i>Mkt. Milk 4</i> <i>Fruit Gr. 1</i>	<i>But. Mak. 1 &amp; 2</i> <i>Mkt. Milk 4</i> <i>Fruit Gr. 1</i>	<i>But. Mak. 1 &amp; 2</i> <i>An. Disease</i> <i>Ru. Imp.</i> <i>Beekeeping</i>	N. E. Ru. Life
WEDNESDAY	Dairy, Fruit Gr.	Live Stock Feed. Ent.	Poultry Types & Breeds Floricult.	Soil Fert.	<i>But. Mak. 3 &amp; 4</i> <i>Mkt. Milk 5</i> <i>Babcock 1 &amp; 2</i> <i>Land. Gard.</i> <i>Bee Keep.</i> <i>Poultry 1</i>	<i>But. Mak. 3 &amp; 4</i> <i>Mkt. Milk 5</i> <i>Babcock 1 &amp; 2</i> <i>Land. Gard.</i> <i>Bee Keep.</i> <i>Poultry 1</i>	<i>But. Mak. 3 &amp; 4</i> <i>Babcock 5 &amp; 6</i> <i>Mkt. Gard.</i>	<i>Babcock 5 &amp; 6</i> <i>An. Breed.</i> <i>Forestry</i>
THURSDAY	Dairy, Ru. San. Sc. Botany	Fld. Crops	Dairy Bact. Floricult. (Jan. 5-Feb. 2) <i>An. Breed. 2</i>	Poultry Floricult. (Feb. 2- Mar. 15) <i>An. Breed. 2</i>	<i>But. Mak. 3 &amp; 4</i> <i>Mkt. Milk 6</i> <i>Fruit Gr. 2</i>	<i>But. Mak. 3 &amp; 4</i> <i>Mkt. Milk 6</i> <i>Fruit Gr. 2</i>	<i>But. Mak. 3 &amp; 4</i> <i>An. Disease</i> <i>Ru. Imp.</i>	N. E. Ru. Life
FRIDAY	Dairy, Fruit Gr.	Live Stock Feed. Ent.	Poultry Types & Breeds Floricult.	Soil Fert.	<i>But. Mak. 5 &amp; 6</i> <i>Mkt. Milk 1</i> <i>Babcock 3 &amp; 4</i>	<i>But. Mak. 5 &amp; 6</i> <i>Mkt. Milk 1</i> <i>Babcock 3 &amp; 4</i>	<i>But. Mak. 5 &amp; 6</i> <i>Types and Breeds 1</i> <i>Mkt. Gard.</i> <i>Farm Accts.</i>	<i>Types and Breeds 1</i> <i>Farm Accts.</i>
SATURDAY	<i>Types &amp; Breeds</i> <i>1</i> <i>Fld. Crops 1</i> <i>Land. Gard.</i>	<i>Types &amp; Breeds</i> <i>1</i> <i>Fld. Crops 1</i> <i>Land. Gard.</i>	<i>Types &amp; Breeds</i> <i>2</i> <i>Fld. Crops 2</i> <i>Floricult.</i>	<i>Types &amp; Breeds</i> <i>2</i> <i>Fld. Crops 2</i> <i>Floricult.</i>	<i>But. Mak. 5 &amp; 6</i> <i>Mkt. Milk 2</i> <i>Mechanics</i> <i>Poultry 2</i> <i>Floricult.</i>	<i>But. Mak. 5 &amp; 6</i> <i>Mkt. Milk 2</i> <i>Mechanics</i> <i>Poultry 2</i> <i>Floricult.</i>	<i>But. Mak. 5 &amp; 6</i> <i>Floricult.</i>	<i>Floricult.</i>

Italics are Laboratories.

Types and Breeds 1 same men as Dairying 1-2-3.

Types and Breeds 2 same men as Dairying 4-5-6.

MASSACHUSETTS AGRICULTURAL COLLEGE.

TEN WEEKS' COURSE.

Application Blank.

Those desiring to make application for admission to the Ten Weeks' Course please fill out this blank.

Name (Mr., Mrs., or Miss) .....

Date of Birth.....

Post Office .....Street Address .....

State .....Present Occupation .....

School last Attended .....

Reference .....

Name of person to notify in case of illness or accident .....

Address.....

After consulting the schedule on page 12, place an X before each course you wish to take. Send this blank to the Director.

GROUP A

GROUP C

Course	Hours	Course	Hours
1. Soil Fertility	3	16. Botany	2
2. Field Crops	3	17. Entomology	3
3. Types and Breeds of Live Stock	5	18. New Eng. Rural Life Required	0
4. Live Stock Feeding	3	19. Farm Accounts	1
5. Live Stock Management	1	20. Mechanics	1
6. Animal Breeding	2	21. Rural Sanitary Science	2
7. Dairying	9	22. Beekeeping	2
8. Dairy Bacteriology	2	23. Rural Improvement	2
9. Animal Diseases and Stable San- itation	2		
10. Poultry Course	6		

GROUP B

Course	Hours
11. Fruit Growing	4
12. Market Gardening	3
13. Landscape Gardening	2
14. Floriculture	5
15. Forestry	1



## REQUIREMENTS FOR ADMISSION.

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No entrance examinations are required, but students are advised to review their school work in English and arithmetic before entering. Practical experience in farm, garden, orchard, or greenhouse work will be an advantage. The courses are open to both men and women.

Students must be at least 18 years of age, and must furnish satisfactory evidence of good moral character. References are required and these are investigated before applicants are accepted.

Application for admission should be made as early as possible by filling out the blank on Page 13 of this bulletin. Those who register in courses in which the number of students is limited, are required, in order to hold a place in the course, to send the \$5 registration fee with the application blank. Those who do *not* register in limited courses, should pay the fee on the opening day of the courses, January 5.

It is sometimes necessary, when the registration becomes too large, to limit the numbers in certain courses. Those who are late in entering are admitted only on consent of the instructors of the courses.

Students should report to the Director on Monday, January 5, in order to begin work promptly on the morning of January 6.

## EXPENSES AND OTHER INFORMATION.

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A registration fee of \$5 is charged those who take the Ten Weeks' Course. This fee is payable upon the opening day of the courses, unless, as stated above, the student is desirous of taking courses which have a limited enrollment.

Other expenses of taking this course are about as follows:

Furnished rooms in private families . . . . .	\$1.50, \$3.00 per week
Board at College Dining Hall . . . . .	\$4.00 per week
Board in private families . . . . .	\$5.00, \$6.00 per week

A Lunch Counter is operated in connection with the College Dining Hall. Those who desire may obtain meals here a la carte at very reasonable prices.

Students in each of the dairy courses must provide themselves with two white wash suits, and a white cap for use in the practical dairy work. The cost in Amherst is about \$1.25 for suit and cap.

A list of available rooms is furnished at registration time, and every effort will be made to see that all who come are comfortably located.

## RULES AND REGULATIONS.

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Those who attend the short courses are expected to conduct themselves in a manner that will conform to the usages of good society.

As a guide to those who come to the college for the first time the following extracts are taken from the regular rules of the college.

“The customary high standard of college men in honor, manliness, self-respect, and consideration for the rights of others, constitute the standards of student deportment.

“It should be understood that the college, acting through its President or any administrative officer designated by him, distinctly reserves the right not only to suspend or dismiss students, but also to name conditions under which students may remain in the institution.”

In past years both regular and short course students in the college have been required to attend chapel daily and assembly once a week.

On account of lack of seats in the chapel, due to the increase of regular students, short course students in 1914 will not be required to attend chapel or assembly, but are required to attend the lectures on New England Rural Life which take the place of chapel and assembly.

## ORGANIZATIONS.

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During the past three years short winter course students have maintained an organization for social, recreative, and study purposes. This organization has met each week during the course.

The Stockbridge Club is a student organization which holds meetings every week for the discussion of agricultural and horticultural affairs. Its meetings are often addressed by well-known specialists. Membership is open to students of the short courses.

The M. A. C. Christian Association meetings, conducted by students and outside speakers, are held regularly on Thursday evenings, at 6.45 o'clock, in the Stone Chapel. All short course students are cordially invited to attend these meetings.

## **THE LIBRARY.**

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The college library occupies the entire lower floor of the Chapel — library building — and contains nearly 30,000 volumes in addition to a large number of pamphlets. The equipment is such that the library ranks extremely well with the agricultural libraries of the country. Short course, as well as regular students, are able to find splendid material in every line of college work, especially in agriculture, botany, entomology, and sociology. The reading room is provided with a variety of magazines, encyclopedias, and reference books, in addition to the newspapers and Agricultural weeklies.

The library hours are from seven forty-five a. m. to nine p. m. every week day, excepting meal time, and from nine a. m. to two p. m. on Sundays. The librarian or his student assistants will always be on hand, ready and willing to be of assistance to short course students.

## **Other Short Courses.**

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### **APPLE PACKING SCHOOL.**

**January 21 — 28, Inclusive.**

The work of this School, which will be conducted by the Department of Pomology, will be of a practical nature and include both box and barrel packing. Persons taking the course will become familiar with the various styles of packs and will receive sufficient practice to enable them to do good commercial packing.

The work in packing will be supplemented by lectures on leading phases of commercial orcharding; such as planting, varieties, spraying, pruning, harvesting, marketing, and so forth.

A fee of \$5.00 to help pay for fruit and other materials used is charged for this course. This course is limited to 30 students:

## **SCHOOL FOR TREE WARDENS.**

**March 24 — 27.**

This school is held in response to a call from tree wardens and city foresters for instruction in the planting, care, and preservation of trees. The State Forester and the Massachusetts Forestry Association co-operate with the College in giving the work.

Instruction is given in tree planting, forestry practices, diseases of trees, insects affecting trees, spraying, pruning, tree surgery, sprayers and apparatus, shade tree surveys, civic improvement, duties of tree wardens, laws and regulations, and so forth.

The course is held at the College about the fourth week in March and lasts from three to five days. An Extension School in these subjects will probably also be arranged at some convenient point in the eastern part of the state.

No registration or other fees are charged. The cost of board and room is low. For dates, detailed programs and other information, write William D. Hurd, Director, Amherst, Mass.

## **FARMERS' WEEK.**

**March 16 — 20, 1913.**

In order to reach those who cannot come to the college for a longer time, this very practical course, four days in length, will be given. The regular college equipment will be used, and the work of the regular faculty will be supplemented by lectures and demonstrations given by eminent men.

The work will be divided into three sections: (1) General Agriculture, to include Farm Management, Farm Crops, Dairy-



ing, Animal Breeding and Feeding, Veterinary Science, and Bacteriology; (2) Horticulture, to include Fruit Growing, Market Gardening, Floriculture, and Forestry; (3) Farmers' Wives' Section, including lectures and demonstrations in Home Economics, Cookery, and problems of Home-Making.

Features of the week will be the evening lectures by specialists along agricultural lines, the conference pertaining to problems of rural betterment aside from practical agricultural topics, a corn and grain show, and others.

Other special features will be the usual corn, dairy, and fruit shows, all of which should be better than ever.

Specially good examples of the dairy breeds of cattle and of draft horses will be used during this week and a parade of live stock will be made.

Exhibit of poultry feeds, various types of houses, poultry house equipment, and inasmuch as our Incubator and Brooder Departments will be running to their fullest capacity, guides will be furnished to conduct visitors about the poultry plant.

The Massachusetts Dairymen's Association, M. A. C. Agricultural Improvement Association, and other organizations will hold their annual meetings at the college this week.

Complete program will be published and sent on request about February 15.

## **COURSE IN BEEKEEPING.**

### **Dates to be announced.**

The college has recently come into possession of a number of swarms of bees which, with the other equipment to be added, will afford a fine opportunity for those interested to get some practical information on this subject.

The course will be under the direction of Dr. Burton N. Gates. The following courses will be given:

- |   |                       |
|---|-----------------------|
| 1. Practical Phases of Beekeeping,                | Dr. Burton N. Gates   |
| 2. Crops for Honey Bees,                          | Dr. William P. Brooks |
| 3. Relation of Bees to the Pollination of Plants, | Dr. George E. Stone   |
| 4. Origin, and Evolution of the Honey Bee,        | Dr. Henry T. Fernald  |
| 5. Bees, and Bee Keepers' Supplies,               | Dr. James B. Paige    |

## **Annual Convention and Field Day.**

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### **Date to be announced.**

The features of this convention will be lectures, demonstrations by authorities of national reputation, as well as displays by inventors, manufacturers, supply merchants, and queen rearers.

### **A Special Invitation.**

Is extended to all beekeepers to display and demonstrate inventions, implements, or methods. If table space is desired, or special equipment is to be prepared, notice should be sent to Dr. Burton N. Gates, Amherst, Mass., at least two or three weeks before the convention. The college will provide covered tables for the exhibits.

By correspondence in advance every effort will be made to arrange for the comfort of visitors.

## **The Summer School.**

**June 30—July 28, 1914.**

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### **ANNOUNCEMENT.**

The Summer School of Agriculture of the Massachusetts Agricultural College will open June 30, 1914, for a term of five weeks. This will be the sixth session of this Summer School, those of 1907 to 1912 having been highly successful. The experience of these five years will aid in making material improvements in the session of 1914.

The work of the Summer School was designed originally for school teachers, and the attendance has been largely of that class. Special attention will be given to the needs of teachers again this year. It has been found, however, that there are many persons who seek a general knowledge of theoretical and practical agriculture and who can come to the College conveniently during the summer season. Extended courses will be offered for the benefit of such persons also.

The following courses will probably be offered in 1914:

Soils and Tillage	Bird Life
Field Crops	Insect Life
Domestic Animals	Entomology
Dairying	Beekeeping
Poultry Husbandry	Home Economics
Fruit Growing	Domestic Science
Practical Gardening	Home and School Gardening
Trees and Shrubs	High School Agriculture
Forestry	Home Floriculture
Landscape Gardening	Agricultural Economics
Elementary Chemistry	Rural Sociology
Agricultural Chemistry	Rural Literature
Plant Life	Agricultural Education
Cryptogamic Botany	Organized Play and Recreation
	Arts and Crafts

From these courses it will be possible to make up programs of work suitable to the needs of almost everyone, but especially of school teachers, principals, superintendents, school committeemen, farm owners, householders, suburban residents, clergymen, pastors, preachers, social workers, and those who have only a general interest in agriculture. Persons who are in doubt as to what courses will best suit their needs had better correspond with the Director of The Extension Service, who will gladly advise in all such matters.

Special courses covering two weeks are offered especially for clergymen, librarians, and other rural leaders.

### GENERAL PLANS.

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From the courses offered, each student may elect courses of not less than ten or more than fifteen exercises a week, unless a larger or smaller amount of work is allowed by the Director. These courses include a large amount of field work, observation trips, out-door exercises and laboratory experiments.

Besides these, general field exercises will be arranged for one afternoon of each week. These will be on topics of interest to all. Class excursions will be arranged for every Wednesday afternoon, and more extended excursions for the whole school will be planned for every Saturday. These excursions will be personally conducted by members of the Faculty, as heretofore. In the past, they have proven a very enjoyable feature of the work.

Round tables and special discussions will be arranged by various instructors, as their courses require.

A course of evening lectures on popular topics relating to the work of the school will be a feature of the general program. Several able lecturers are to be engaged for this course. Like everything else connected with the Summer School, this lecture course is entirely free to all students.

The expenses are low. Amherst is situated in one of the most noted historical and educational centers in this country. Anyone interested in problems pertaining to country life should not fail to attend. A descriptive circular can be had March 1, 1914.

## **BOYS' AGRICULTURAL CAMPS.**

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**During July. Dates to be announced.**

The Boys' Camp is arranged in order that boys from rural districts and small towns may receive some instruction in agriculture, clean, wholesome sports, and that they may have impressed upon them their responsibilities as coming members of society. Teachers, clergymen, Y. M. C. A. workers are especially urged to send boys who will be benefited by the instruction given at this Camp.

The Camp is under the strictest military discipline. Boys who do not care to conform to this are not expected to come. Not more than forty-two boys — reservation being made for three from each county — will be taken at one time. A succession of these camps, each lasting one week, may be arranged during July. The cost to each boy has in the past, been seven dollars for the week. This fee helps defray the cost of maintaining the camp, meals, instruction, lectures, and so forth.

The daily program consists of Camp duty, flag raising, and so forth; agricultural lessons, talks on hygiene, good citizenship and so forth; play and recreation, instruction in handicrafts, photography, evening camp fires, and lectures by men prominent in boys' work.

## **POULTRY CONVENTION.**

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**July 22 — 24, 1914.**

The attendance at the Poultry Convention last summer indicates that the latter part of July is the best time of the year to hold such a meeting. The expressions of appreciation and requests that the event be made an annual affair justify us in announcing that a similar Convention will be held July 22—24, 1914. This Convention is held in order to give a large number of poultrymen, who cannot come to the college for a longer time, practical instruction in modern methods of breeding, feeding, poultry house construction, operation of incubators and brooders, selecting and judging poultry for utility and for show, marketing poultry products, etc., a convention lasting nearly a week will be held on the dates given above. The week will be filled with practical talks and demonstrations. Some of the leading professional and practical men in this country will be engaged to supplement the work of the regular faculty.

No charges aside from cost of room and board are made those who come for this course.

## **CONFERENCE OF RURAL LEADERS.**

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**July 28—August 31.**

The Conference of Rural Leaders which has been held as a closing feature of the Summer School will take place as usual.

It is hoped the following organizations will co-operate with the College by furnishing teachers and lecturers for their respective sections: The Federation of Churches of Massachusetts, The State Board of Education, The Free Public Library Commission, The Massachusetts Civic League, The State

Board of Health, The County Work of the Young Men's Christian Association, The National Board of the Young Women's Christian Association, The New England Home Economics Association, The Russell Sage Foundation, and The State Grange.

Definite class instruction will be given each morning. The afternoons will be given up entirely to special and general conferences, demonstrations of organized play, recreation, etc. The evenings will be given over to music and lectures by the most eminent men who are making a study of rural sociology, economics and education.

The Rural Social Service exhibits will be more elaborate and extensive than in 1913.

The object of this conference is to acquaint those who are leaders in their respective communities with the work that is going on, not only in Massachusetts, but in New England and other parts of the world, and to give them renewed inspiration and enthusiasm for larger and more intelligent efforts.

Teachers, clergymen, grange officers, librarians, county Y. M. C. A. workers, town officers, boards of health, officers of village improvement societies, homemakers, school officers and all others interested in community development are cordially invited to attend this Conference. The expenses for board and room are low. There are no tuition or registration fees.

A complete program will be published next June and can be had by making application for it.

## Helps for Those Who Cannot Come to Any of the Short Courses.

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### LECTURE COURSES AND PRACTICAL DEMONSTRATIONS.

The public lecture work of the faculty has been systematized. Granges, Farmers' Clubs, Young Men's Christian Associations, Boards of Trade, Women's Clubs, Village Improvement Societies, and other organizations can secure lectures covering agricultural and allied subjects either singly, or courses of several lectures can be arranged for. Practical

demonstrations, such as spraying, milk testing, stock judging, mixing fertilizers, fruit grading and packing, and others of a similar nature, will also be given when application is made for them. Organizations named above can arrange with the college to have a series of evening meetings, at which agricultural subjects and topics pertaining to rural life will be presented in a popular way. It should be understood that the number of men available for this work is at present limited; hence early application is desirable.

Send for circular giving lecturers' names and subjects.

### **Correspondence Courses.**

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So many calls have come to the college for lessons by correspondence that courses in Soils and Soil Improvement, Manures and Fertilizers, Field Crops, Farm Dairying, Fruit Growing, Market Gardening, Animal Feeding, Floriculture, Farm Accounts, Agriculture in the Elementary Schools, Agricultural Education, Beekeeping, Forestry, Shade Tree Management, Entomology, and Poultry Husbandry have been prepared.

A small fee to cover the cost of postage, etc., is charged in each course.

Send for circular fully describing these.

### **OTHER LINES OF WORK CONDUCTED BY THE EXTENSION SERVICE.**

Through The Extension Service the Massachusetts Agricultural College endeavors to help all the people in the Commonwealth who are interested in securing agricultural information. A corps of field agents is being engaged to carry up-to-date information to all who ask for it.

The college is now prepared to do definite, organized work in the following lines:

Educational work in:

Extension Schools

Exhibits at Fairs, etc.

Demonstration Trains

Community Organization

Agricultural Surveys

Farmers' Business Corporation

Fruit-growing	Rural Credit Systems
Dairying	Demonstration Plots
Animal Husbandry	County or District Agricultural Ad- visors
Poultry Management	Advisory Work With Institutions and Individuals
Farm Management (Co-operating with U. S. D. A.)	Auto Demonstration Outfit
Civic Betterment	Publications
Agricultural Education (Boys' and Girls' Clubs, etc.)	Advice by Personal Conferences and Letters
Home Economics	

For further information, regarding any of the activities of the Extension Service or to register in any of the Short Courses, write or apply to

WM. D. HURD,  
 Director, Extension Service,  
 M. A. C.,  
 Amherst, Mass.



**DIRECTORY — INFORMATION MAY BE SECURED FROM THE  
MASSACHUSETTS AGRICULTURAL COLLEGE  
AS INDICATED BELOW.**

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**A. The College.**

Those desiring college catalogs, the President's annual report, and other pamphlets giving full information relative to entrance requirements, course of study, expenses, opportunities for student labor, and so forth, should address President Kenyon L. Butterfield, Amherst, Mass.

All questions regarding admission to the College, either to the freshman class or to advanced standing should be addressed to Professor P. B. Hasbrouck, Registrar, Amherst, Mass.

**B. The Experiment Station.**

The Experiment Station conducts investigations in as many lines of agricultural science and practice as its funds will permit. It has charge of the inspection of commercial fertilizers, commercial feeding stuffs, and milk testing apparatus. Branch stations in cranberry and asparagus culture are maintained in other sections of the state.

The Station considers the farmers' problems to be its problems, and desires to keep in touch with them.

Requests for bulletins reporting the results of experiments and inspections and for other information on the work of the Station should be addressed to Massachusetts Agricultural Experiment Station, Amherst, Mass.

**C. The Graduate School.**

Questions relating to courses offered leading to the degrees of Master of Science and Doctor of Philosophy, admission and work required, should be addressed to Dr. Charles E. Marshall, Director of the Graduate School, Amherst, Mass.

**D. The Extension Service.**

Inquiries of a general nature regarding the work of the Extension Service, the Short Courses, publication or requests for new lines of work should be addressed to William D. Hurd, Director of the Extension Service, Amherst, Mass.

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**STATEMENT OF THE OWNERSHIP**

Management, circulation, etc., of the M. A. C. Bulletin. Published six times a year at Amherst, Mass. Required by the act of August 24, 1912. Editor, Massachusetts Agricultural College, Amherst, Mass. Business manager, Massachusetts Agricultural College, Amherst, Mass. Owner, Massachusetts Agricultural College, Amherst, Mass.

[Signed] Ralph J. Watts,  
Secretary to the President, Mass. Agr. College.

Sworn to and subscribed before me, }  
this 28th day of March, 1913. }

[SEAL] [Signed] Fred C. Kenney, Notary Public.

(My commission expires Jan. 29, 1916.)

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